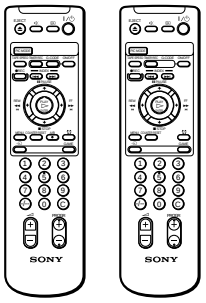
Self Diagnosis Supported model

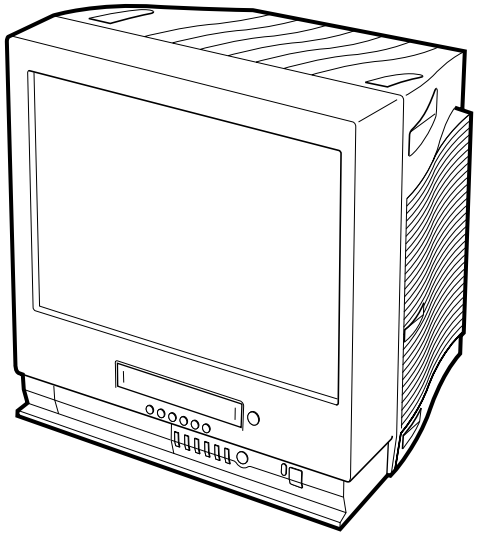
SERVICE MANUAL BC-4A CHASSIS

MODEL	COMMANDER	DEST.	CHASSIS NO.
KV-VF21M40	RM-956	E	SCC-P10A-A
KV-VF21M70	RM-956	ME	SCC-P11A-A
KV-VF21M70	RM-956	JE	SCC-P12A-A

MODEL	COMMANDER	DEST.	CHASSIS NO.
KV-VF21M70	RM-956	HK	SCC-P09B-A
KV-VF21M77	RM-955	HK	SCC-P09A-A



RM-955 RM-956



VHS
PAL NTSC

G-CODE® (VF21M77 ONLY)

MICROFILM

∗ Please file according to model size. ....□

21

TRINITRON® COLOR VIDEO TV

SONY®

SPECIFICATIONS

TV Section

Television system	B/G, I, D/K, M
Color system	PAL/SECAM and NTSC3.58/NTSC4.43
Bilingual system (VF21M77 ONLY)	NICAM bilingual I
Channel coverage	See "Receivable channels and channel display"
Picture tube	Trinitron 21 inches (approx. 50.7 cm measured diagonally)
Antenna in	75-ohm antenna socket for VHF/UHF

Video Section

Format	VHS standard
Video recording system	Rotary 2-head helical scanning system
Audio recording system	Monaural
Video signal	PAL/MESECAM/NTSC
Tape speed	PAL/MESECAM SP: 23.39 mm/sec. LP: 11.70 mm/sec. NTSC SP: 33.35 mm/sec. EP: 11.11 mm/sec.
Maximum recording time	PAL/MESECAM SP: 240 minutes with E-240 LP: 480 minutes with E-240 NTSC SP: 180 minutes with T-180 EP: 540 minutes with T-180

Inputs and Outputs

Inputs	1, 2/GAME IN (video): phono jack 1 Vp-p, 75 ohms, unbalanced, sync negative ♪ (audio): phono jack Input level: 500 mVrms
Headphones jack	Minijack

General

Clock	Quartz locked
Power requirements	110-240 V AC, 50/60Hz
Power consumption	123 W
Operating temperature	5° C to 40° C (41° F to 104° F)
Storage temperature	–20° C to 60° C (–4° F to 140° F)
Dimensions	489 x 500 x 485 mm (19 3/8 x 19 3/4 x 19 1/8 inches)
Mass	27.5 kg (60 lb 10 oz.)

Supplied accessories

Remote control
Two R6 (size AA) batteries
Stabilizer band
Two clamps
Two wood screws
AC plug adaptor (E/ME/JE model)
These operating instructions

Design and specifications are subject to change without notice.

Receivable channels and channel display

System	Area	Channel coverage	Channel display
B/G, H	Middle East/Asia	E-2 to E-12 E-21 to E-69	C02 to C12 C21 to C69
	Indonesia	1A 2 to 11	C01 C03 to C12
	Morocco	M-4 to M-7 M-8 to M-10	C70 to C73 C08 to C10
	CATV	S-01 to S-05 S-1 to S-41	S42 to S46 S01 to S41
I	Hong Kong/ United Kingdom	B-21 to B-69	C21 to C69
	Ireland	A, B, C,....J	C01 to C10
	South Africa	4 to 13 21 to 68	C04 to C13 C21 to C68
	Angola	1 2 to 3	C00 C02 to C03
	CATV	S-01 to S-05 S-1 to S41	S42 to S46 S01 to S41
D/K, K1	East European coutries	R-1 to R-12 R-21 to R-60	C01 to C12 C21 to C60
	China	C-1 C-2 C-3 C-4 C-5 C-6 C-7 to C-12 C-13 to C-24 C-25 to C-47 C-48 to C-57	C01 C02 C13 C03 C04 C14 C06 to C11 C21 to C32 C38 to C60 C61 to C70
	Ivory Coast	1 to 3	C71 to C73
	CATV	S-1 to S-39	S01 to S39
M	America	A-2 to A-13 A-14 to A-69	C02 to C13 C14 to C69
	CATV	A-8 A-7 A-6 A-5 to A-1 A to E F to W+28 W+29 to W+58	S01 S05 S06 S95 to S99 S14 to S18 S19 to S64 S65 to S94

TABLE OF CONTENTS

CAUTION

SHORT CIRCUIT THE ANODE OF THE PICTURE TUBE AND THE ANODE CAP TO THE METAL CHASSIS, CRT SHIELD, OR CARBON PAINTED ON THE CRT, AFTER REMOVING THE ANODE.

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY SHADING AND MARK ⚠ ON THE SCHEMATIC DIAGRAMS, EXPLODED VIEWS AND IN THE PARTS LIST ARE CRITICAL FOR SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY. CIRCUIT ADJUSTMENTS THAT ARE CRITICAL FOR SAFE OPERATION ARE IDENTIFIED IN THIS MANUAL. FOLLOW THESE PROCEDURES WHENEVER CRITICAL COMPONENTS ARE REPLACED OR IMPROPER OPERATION IS SUSPECTED.

SELF DIAGNOSTIC FUNCTION

1. OUTLINE

- The units in this manual contain a self-diagnostic function.
- If an error occurs, the STANDBY lamp will automatically begin to flash.
  The number of times the lamp flashes translates to a probable source of the problem. A definition of the STANDBY lamp flash indicators is listed in the instruction manual for the user's knowledge and reference.
- If an error symptom cannot be reproduced, the remote commander can be used to review the failure occurrence data stored in memory to reveal past problems and how often these problems occur.

2. DIAGNOSTIC TEST INDICATORS

- When an errors occurs, the STANDBY lamp will flash a set number of times to indicate the possible cause of the problem. If there is more than one error, the lamp will identify the first of the problem areas.
- Result for all of the following diagnostic items are displayed on screen. No error has occured if the screen displays a "0".

Diagnostic Item Description	No. of times STANDBY lamp flashes	Self-diagnostic display/Diagnostic result	Probable Cause Location	Detected Symptoms
• Power does not turn on	Does not light	—	• Power cord is not plugged in. • Fuse is burned out F901	• Power does not come on. • No power is supplied to the TV. • AC power supply is faulty.
• +B overcurrent (OCP) or overvoltage (OVP)	2 times	2 : 0 or 2 : 1 4 : 1] at the same time (Note 1)	• FBT • Q802 (H OUT) shorted	• On standby state. • Load on power line is shorted (at the same time 4 : 1 on display).
• Vertical deflection stopped	4 times	4 : 0 or 4 : 1	• IC501 • IC301 ⑭ pin • IC606 • Q802 (H OUT) shorted • Q803 • Q608 • R803 open	• Has entered standby state after horizontal raster. • Vertical deflection pulse is stopped. • Horizontal deflection stopped. • Power line is shorted or power supply is stopped.
• White balance failure (no PICTURE)	5 times	5 : 0 or 5 : 1	• CRT • IC301 • IC701 - IC703, Q701 (CV board) • G2 is improperly adjusted. (Note 2)	• No raster is generated. • CRT cathode current detection reference pulse output is small.

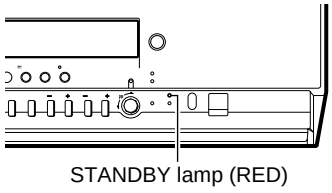
Note 1: If a + B overcurrent is detected, stoppage of the vertical deflection is detected simultaneously.
The symptom that is diagnosed first by the microcontroller is displayed on the screen.

Note 2: Refer to screen (G2) Adjustment in section 3-4 of this manual.

• VCR EMG code List

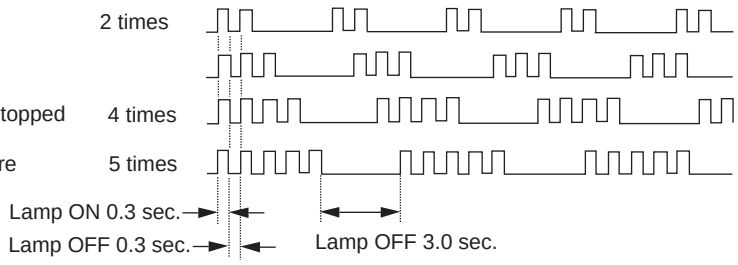
Code	Coutents	Code	Coutents
00h	NO EMG	30h	Capstan FG NG at initial
10h	CAM encode NG during unloading	31h	Capstan FG NG
11h	CAM encode NG during unloading	40h	Drum FG NG
12h	CAM encode NG at intial	41h	Drum FG NG at initial
20h	T reel NG during unloading	42h	Drum FG NG
21h	S reel FG NG	43h	Drum PG NG
22h	T reel FG NG	44h	Drum PG NG
23h	S reel FG NG	50h	DEW
24h	T reel FG NG at initial	60h	FL NG
25h	S reel FG NG at initial	70h	DEW eject NG

3. DISPLAY OF STANDBY LIGHT FLASH COUNT



* One flash count is not used for self-diagnostic.

< Diagnostic Item >	< Flash Count >
• +B OCP/OVP	2 times
• Vertical deflection stopped	4 times
• White balance failure	5 times



STOPPING THE STANDBY FLASH

• Turn off the power switch on the TV main unit or unplug the power cord from the outlet to stop the STANDBY lamp from flashing.

4. SELF-DIAGNOSTIC SCREEN DISPLAY

• For errors with symptoms such as “power sometimes shuts off” or “screen sometimes goes out” that cannot be confirmed, it is possible to bring up past occurances of failure for confirmation on the screen:

[To Bring Up Screen Test]

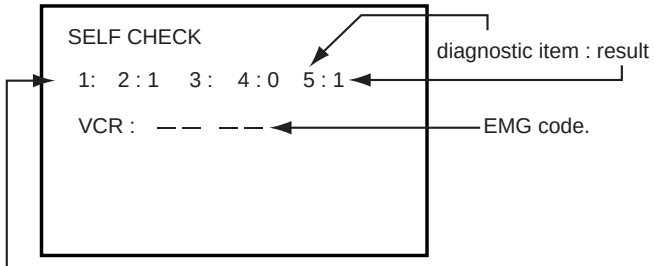
• In standby mode, press buttons on the remote commander sequentially in rapid succession as shown below:

Screen display (i+) ➡ channel 5 ➡ Sound volume - ➡ Power ON ⏻

⇧

Note that this differs from entering the service mode (mode volume +).

Self-Diagnosis screen display



Numeral "0" means that no fault has been detected.

Numeral "1" means a fault has been detected.

Note: Though "1: , 3:" indicated, not using.

5. HANDLING OF SELF-DIAGNOSTIC SCREEN DISPLAY

• Since the diagnostic results displayed on the screen are not automatically cleared, always check the self-diagnostic screen during repairs. When you have completed the repairs, clear the result display to “0”.

• Unless the result display is cleared to “0”, the self-diagnostic function will not be able to detect subsequent faults after completion of the repairs.

[Clearing the result display]

• To clear the result display to “0”, press buttons on the remote commander sequentially as shown below when the diagnostic screen is being displayed.

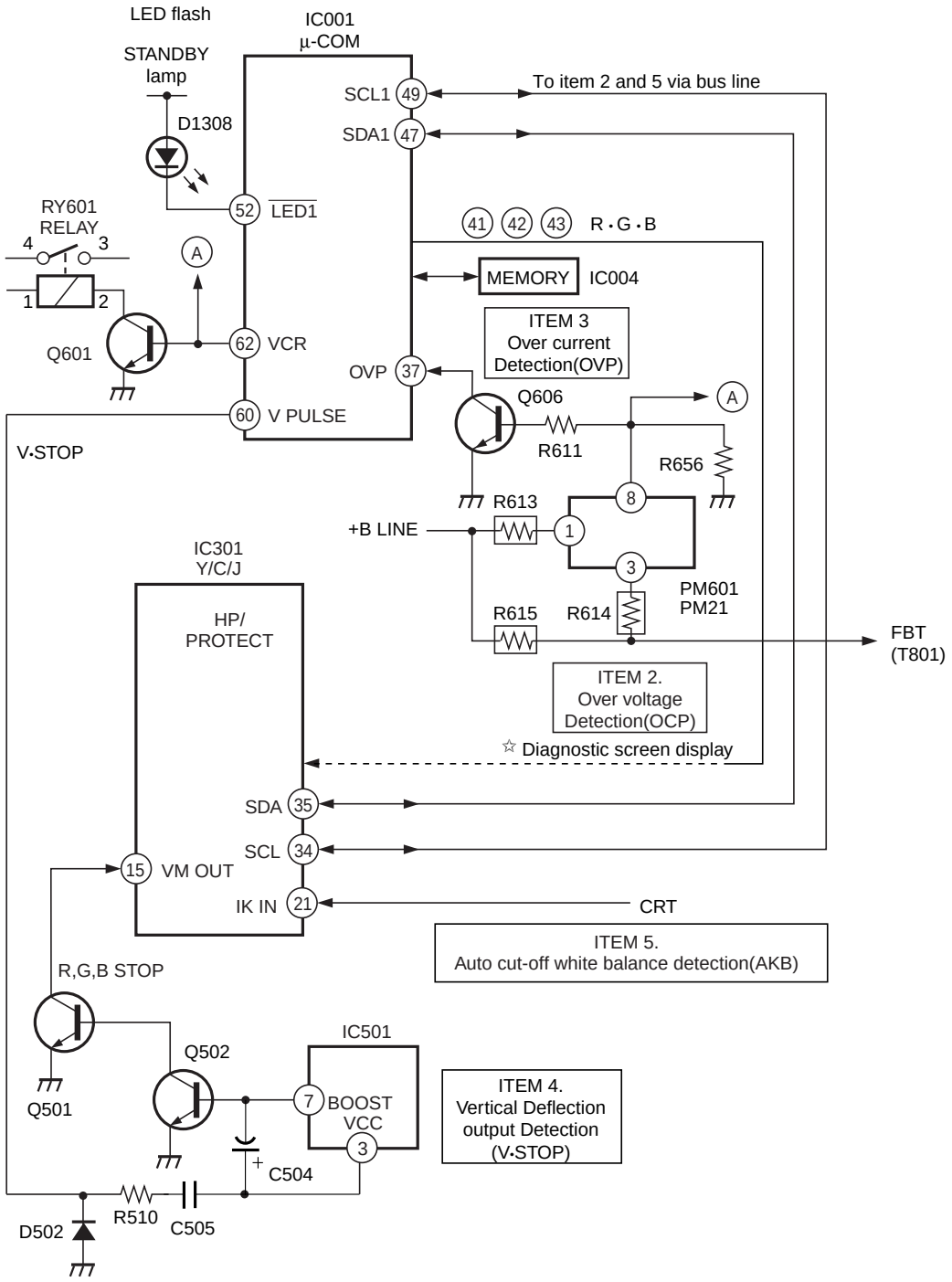
• Pay attention when perform by the service mode, other all electric adjustment data will be rewrite.

Channel 8 ➡ 0

[Quitting Self-diagnostic screen]

• To quit the entire self-diagnostic screen, turn off the power switch on the remote commander or the main unit.

6. SELF-DIAGNOSTIC CIRCUIT



+B overcurrent	Owing to current increase voltage of R615 decrease and that it make PM601 pin ⑧ to become LOW and OFF RY601.
+B over voltage	When +B voltage become more than 142.5V, PM601 ⑧ pin become LOW and RY601 OFF.
Vertical deflection stopped	Detect Vertical deflection Pulse lost by IC001 ⑥⓪ pin of micro computer. Mute the picture at ①⑥ pin of IC301 that performed by Y/C/J.
White balance	Detect when R.G.B. output wrong level balance of automatic white balance detecting standard pulse which detect cathode current, or which become low almost.

The operating instructions mentioned here are partial abstracts from the Operating Instruction Manual. The page numbers of the Operating Instruction Manual remein as in the manual.

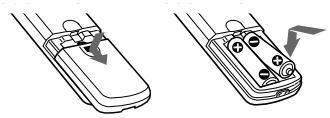
Step 1: Preparation

Check the supplied accessories

When you have taken everything out of the carton, check that you have these items:

- Remote control
- Two R6 (size AA) batteries
- Stabilizer band
- Two clamps
- Two wood screws
- AC plug adaptor
- These operating instructions

Insert the batteries into the remote control



Note

- Do not use old batteries or different types of batteries together.

Step 2: Installing the video TV

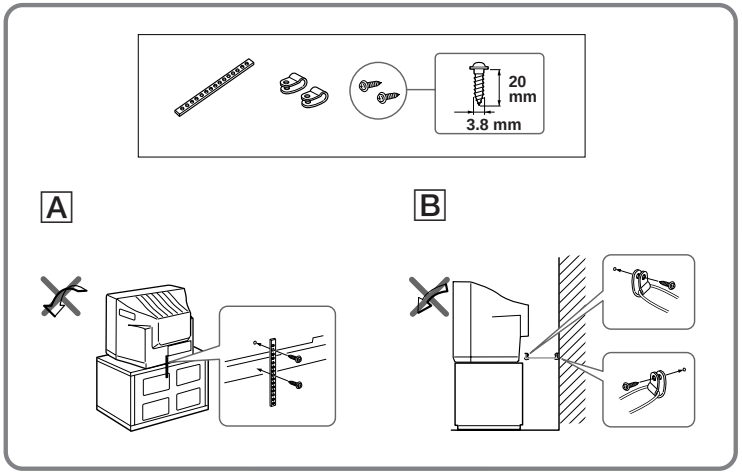
Secure the video TV

To prevent the video TV from falling, secure it using one of the following methods:

A With the supplied screws, attach the stabilizer band to the TV stand and to the rear of the video TV using the existing hole.

OR

B Pass a cord or chain through the clamps and secure them to the rear of the video TV and a wall or pillar.



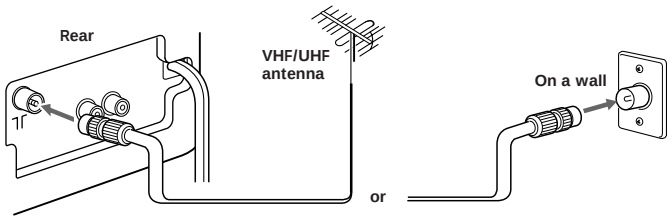
Step 3: Connecting the antenna

For better TV reception and clear recordings, connect an outdoor antenna to your video TV.

Connecting an outdoor antenna

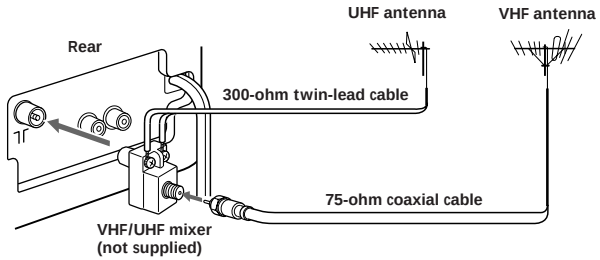
To connect a VHF antenna or a combination VHF/UHF antenna—75-ohm coaxial cable (round)

Attach an IEC antenna connector to the 75-ohm coaxial cable.
Plug the connector into the ⅂ (antenna) socket of the video TV.



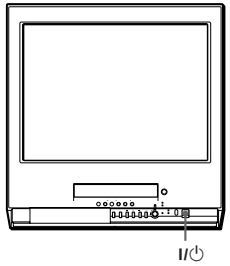
To connect both VHF and UHF antennas

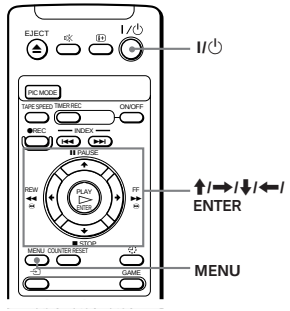
Attach the antenna cable ends to the VHF/UHF mixer (not supplied).
Plug the mixer into the ⅂ (antenna) socket of the video TV.



Step 4: Selecting the language

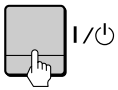
You can change the menu and on-screen information language to Chinese.



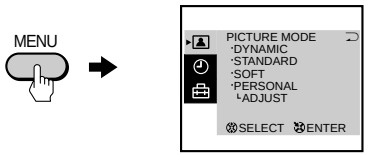


1 Press I/⏻ to turn on the video TV.

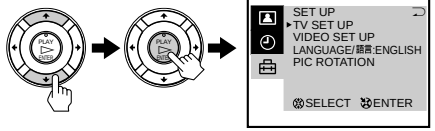
When the TV is in standby mode (the ⏻ indicator on the video TV is lit in red), press I/⏻, PROGR +/– or a number button on the remote control.



2 Press MENU.



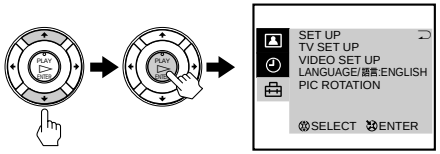
3 Press ↑ or ↓ to select 🖴, then press ENTER.



continued

Step 4: Selecting the language (continued)

4 Press ↑ or ↓ to select LANGUAGE/ 語言, then press ENTER.
The selected item turns red.



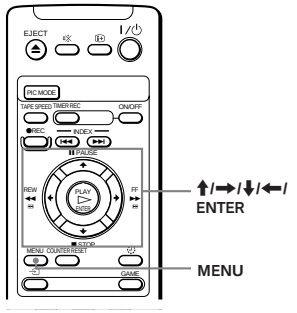
5 Press ↑ or ↓ to select 中文, then press ENTER.
The menu language changes to Chinese.

To return to the normal screen

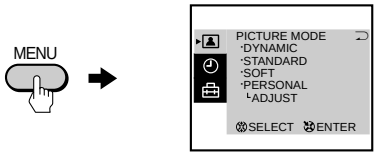
Press MENU.

Step 5: Setting the clock

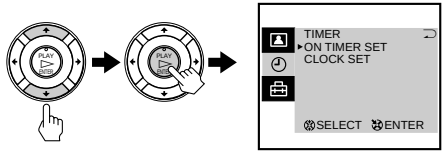
You need to set the clock to use timer recording, Quick-Timer recording and on-timer functions.



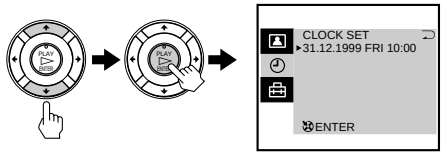
1 Press MENU.



2 Press ↑ or ↓ to select 🕘, then press ENTER.

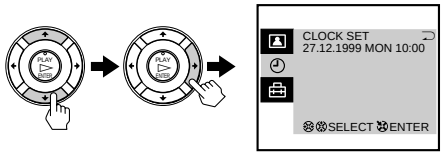


3 Press ↑ or ↓ to select CLOCK SET, then press ENTER.



4 Press ENTER.
The day section turns red.

5 Press ↑ or ↓ to set the day, then press →.
The month section turns red.



continued

Step 5: Setting the clock (continued)

6 Press ↑, ↓ or → to set the month, year, hour and minutes in the same way as in step **5**, then press ENTER.

The clock starts working.

To return to the normal screen

Press MENU.

If you have made a mistake while setting the clock

Press ← to go back to the item to be changed and set the correct digits using ↑ or ↓, then press →.

Note

- If power is interrupted or you disconnect the AC power cord, you have to re-set the clock.

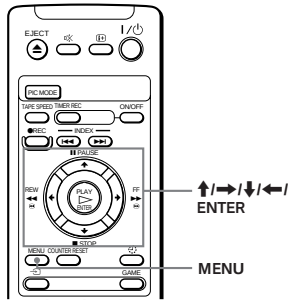
Step 6: Setting the channels

Presetting channels automatically

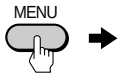
You can preset up to 100 channels.

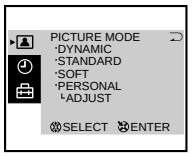
Automatic presetting is the easiest way to setup your video TV if you want to preset all receivable channels at once.

To preset the channels manually, see page 30.

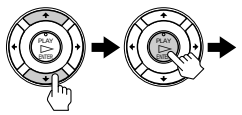


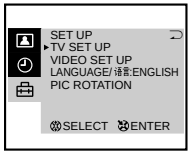
1 Press MENU.



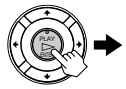


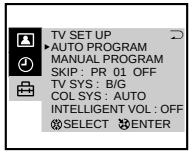
2 Press ↑ or ↓ to select 🧰, then press ENTER.





3 Make sure TV SET UP is selected, then press ENTER.

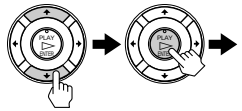


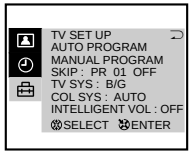


4 Press ↑ or ↓ to select TV SYS, then press ENTER.

The selected item turns red.

Press ↑ or ↓ to select the TV system (B/G, I, D/K or M) and press ENTER.

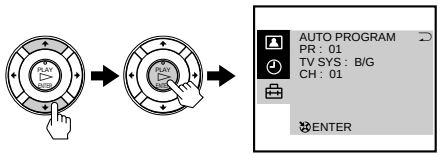




continued

Step 6: Setting the channels (continued)

5 Press ↑ or ↓ to select AUTO PROGRAM, then press ENTER.

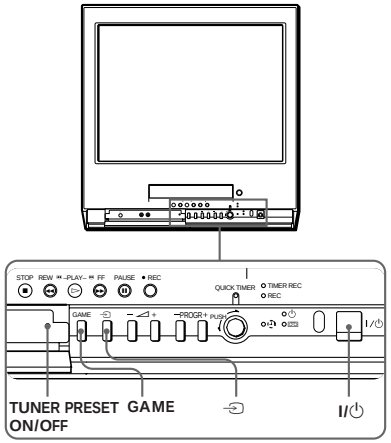


Presetting starts from program position 1. The preset program and channel numbers are displayed on the screen in sequence.
When presetting is finished, program position 1 appears again. All available channels are now stored on successive number buttons.

Tip

- To stop automatic channel presetting, press MENU.

Presetting channels automatically using the TUNER PRESET ON/OFF button on the video TV



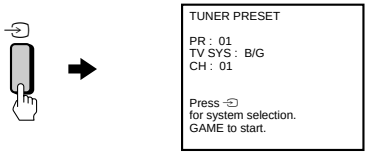
1 Press I/⏻ to turn on the video TV.

When the TV is in standby mode (the ⏻ indicator on the video TV is lit in red), press I/⏻, PROGR +/– or a number button on the remote control.

2 Press TUNER PRESET ON/OFF with a pointed object.

Do not use an item (such as a pencil) that might break off when inserted.

3 Press ⏎ to select the TV system of the channels which you want to preset.



4 Press GAME.

Presetting starts from program position 1. The preset program and channel numbers are displayed on the screen in sequence.

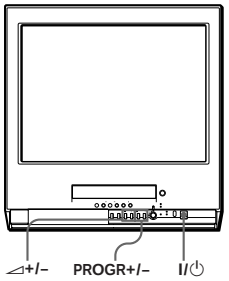
When presetting is finished, program position 1 appears again. All available channels are now stored on successive number buttons.

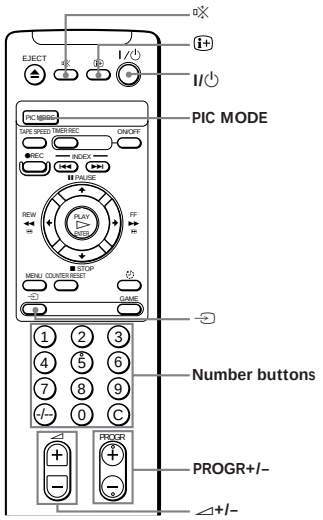
Getting Started

– 12 –

Watching the TV

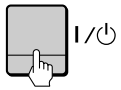
This section explains various functions used while watching the TV. Most operations can be done using the remote control.





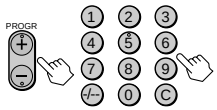
1 Press I/⏻ to turn on the video TV.

When the TV is in standby mode (the ⏻ indicator on the video TV is lit in red), press I/⏻ on the remote control.



2 Press PROGR +/– or the number buttons to select the TV channel.

For double digit numbers, press -/--, then the numbers (e.g., for 25, press -/--, then 2 and 5).



Note

- You can also select the channel number directly with the number buttons. Press C (once for regular channels, twice for cable channels), the desired number buttons, then ENTER.

Additional tasks

To	Press
Turn off temporarily	I/⏻ on the remote control. The ⏻ indicator on the video TV lights up in red.
Turn off the main power	I/⏻ on the video TV. The GO indicator on the video TV lights up in orange.
Adjust the volume	+/–.
Mute the sound	🔇.
Watch the video input (from a connected VCR, camcorder, etc.)	⇥ to select "⇥1" or "⇥2"(see page 48). To return to the TV screen, press ⇥ again.

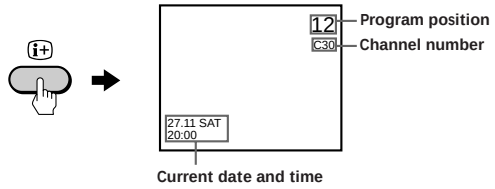
Selecting the picture mode

Press PIC MODE repeatedly until the desired picture mode is selected.

Select	To
DYNAMIC	receive high contrast pictures.
STANDARD	receive normal contrast pictures.
SOFT	receive low contrast pictures.
PERSONAL	receive the latest picture settings from the ADJUST option in the PICTURE MODE menu (see page 35).

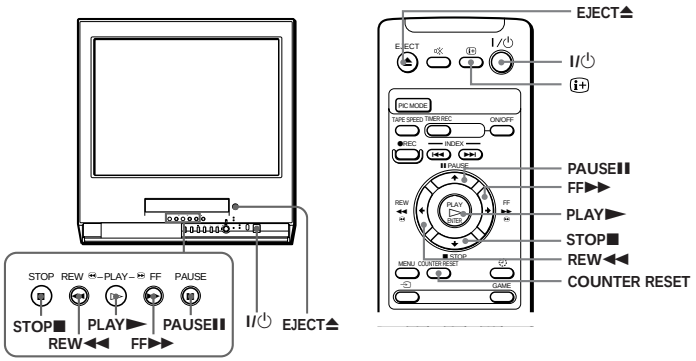
Displaying on-screen information

Press ⓘ to display the following on-screen information.
To have the program number and channel number stay on the screen, press ⓘ again.
To make the information disappear, press ⓘ until no information is displayed on the screen.



Playing a tape

This section shows you how to play a tape. Other convenient functions you can use while playing a tape are explained in "Additional Operations."



1 Press I/⏻ to turn on the video TV.

When the TV is in standby mode (the ⏻ indicator on the video TV is lit in red), skip this step.

2 Insert a cassette.

If you insert a cassette with its safety tab removed, playback starts automatically.

3 Press PLAY ►.

Playback starts. On-screen information is displayed for a few seconds.

Note

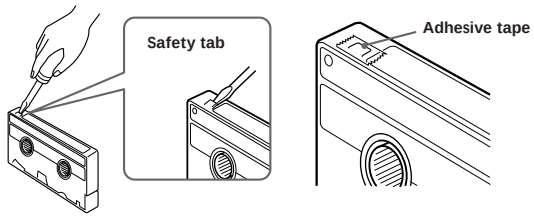
- The picture's color may be affected when playing a MESECAM-recorded tape in the LP mode.

Additional tasks

To	Press
stop playback	STOP ■. The video TV goes back to the normal TV picture.
stop playback for a moment	PAUSE ❚❚. Press PAUSE ❚❚ again or press PLAY ► to resume playback. If you leave your video TV in pause mode, normal playback resumes after about 5 minutes to prevent tape damage.
search a tape at high speed	REW ◄◄ (rewind) or FF ►► (fast-forward) during playback. To resume normal playback, press PLAY ►.
fast-forward the tape	STOP ■, then press FF ►►.
rewind the tape	STOP ■, then press REW ◄◄.
view the picture in fast-forward or rewind mode	and hold FF ►► during fast-forward or REW ◄◄ during rewind. When you release the button, fast-forward or rewind mode is resumed.
eject a cassette	EJECT ≜. You can eject the cassette even if the power is off.

Protecting your cassette against accidental erasure

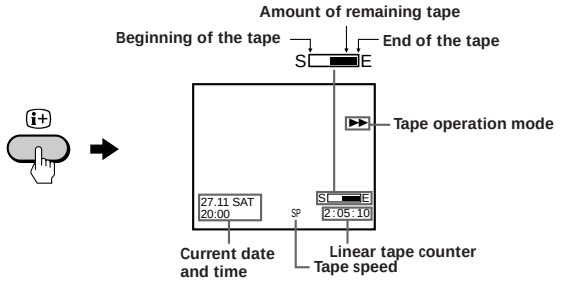
To prevent accidental erasure, break off the safety tab as illustrated. To record on a cassette without a safety tab, simply cover the tab hole with adhesive tape.



continued

Displaying on-screen information

Press ⓘ to display the following on-screen information. To show only the amount of remaining tape and the linear tape counter on the screen, press ⓘ again.
To make the information disappear, press ⓘ until no information is displayed on the screen.

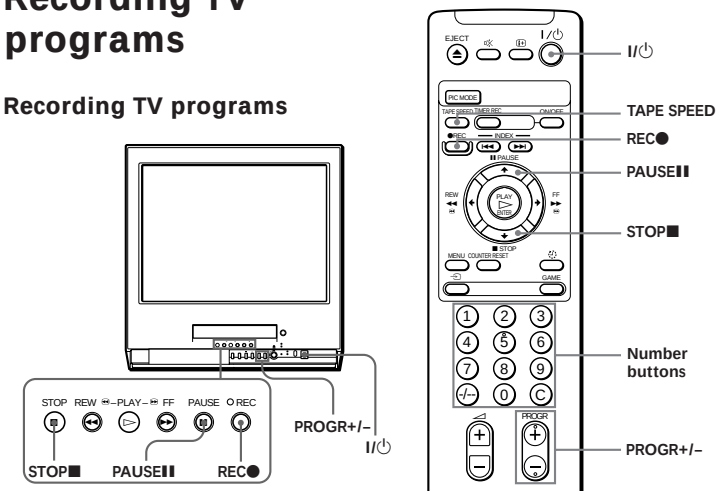


Resetting the tape counter

The tape counter helps you to locate a certain scene after playback. Press COUNTER RESET on the remote control to set the counter to "0:00:00" before playing a tape. The tape counter is automatically reset to zero whenever a cassette is inserted. The video TV keeps counting the length of the tape being played. Note, however, that the tape counter does not count the portions that do not contain any recordings.

Recording TV programs

Recording TV programs



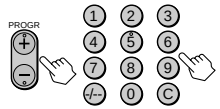
1 Press I/⏻ to turn on the video TV.

If the TV is in standby mode (the ⏻ indicator on the video TV is lit in red), the video TV will turn on automatically when a cassette is inserted.

2 Insert a cassette with a safety tab.

3 Press PROGR+/– or the number buttons to select the program position.

For double digit numbers, press -/--, then press the numbers (e.g., for 25, press -/--, then 2 and 5).



4 Press TAPE SPEED to select the tape speed.

For details about the tape speed, see "Selecting the tape speed" on page 21.

continued

5 Press REC ●.

The REC indicator lights up and recording begins.

Note

- You can also select the channel number directly with the number buttons. Press C (once for regular channels, twice for cable channels), the desired number buttons, then ENTER.

To stop recording

Press STOP ■.
When the tape reaches the end, the video TV rewinds the tape automatically to the beginning, then stops. This function does not work when the power of the video TV is off.

To pause recording

You can cut out an unwanted scene during recording with this button.

1 Press PAUSE ❚❚ when an unwanted scene appears on the screen. Recording pauses.

2 Press PAUSE ❚❚ again to release the pause mode at the end of the unwanted scene.
Recording resumes from the point set in step 1.

When the recording pause mode lasts for about 5 minutes, the video TV stops recording to prevent tape damage.

Recording with the TV off

Press I/⏻ on the video TV.
The video TV is turned off and the ⏺ indicator lights up.
The video TV continues recording.

Selecting the tape speed

The chart below shows the recording/playback time available in each mode.

PAL, MESECAM

Cassette tape	Tape speed setting	
	SP mode	LP mode
E-30	30 min.	1 hr.
E-60	1 hr.	2 hrs.
E-90	1 hr 30 min.	3 hrs.
E-120	2 hrs.	4 hrs.
E-150	2 hrs 30 min.	5 hrs.
E-180	3 hrs.	6 hrs.
E-195	3 hrs 15 min.	6 hrs 30 min.
E-210	3 hrs 30 min.	7 hrs.
E-240	4 hrs.	8 hrs.

NTSC

Cassette tape	Tape speed setting	
	SP mode	EP mode
T-30	30 min.	1 hr 30 min.
T-60	1 hr.	3 hrs.
T-120	2 hrs.	6 hrs.
T-160	2 hrs 40 min.	8 hrs.
T-180	3 hrs.	9 hrs.

Notes

- In the SP mode, the tape runs twice as fast as the LP mode, and three times as fast as the EP mode.
- When a PAL format cassette is used with the NTSC system for recording, the actual recording time is shorter than the standard recording time stipulated on the cassette.

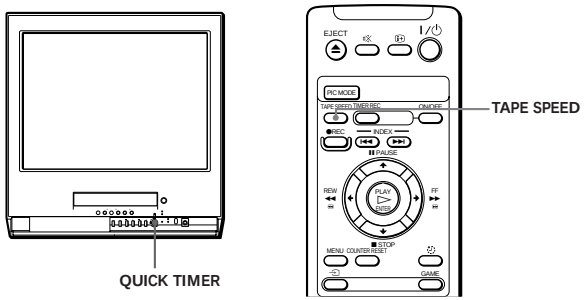
continued

Recording using QUICK-TIMER

The Quick-Timer recording function allows you to preset your video TV to record one program within a 24-hour period. For setting the Quick-Timer, use QUICK TIMER on the video TV.

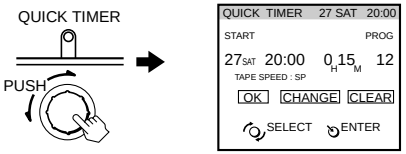
Before you begin

- Make sure that the clock is set correctly. If it is not, see "Setting the clock" on page 9.
- Make sure that the loaded cassette has its safety tab intact.
- Make sure that the video TV does not enter the timer recording standby mode (the TIMER REC indicator on the video TV should not be lit.)



1 Press QUICK TIMER.

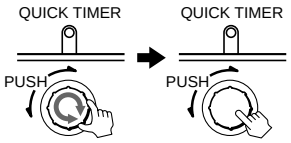
When the TV is in standby mode (the ⏻ indicator on the video TV is lit in red), the power is turned on automatically.



2 Press TAPE SPEED to select the tape speed, SP or LP. EP cannot be selected when making timer recordings.

3 Turn QUICK TIMER to set the hour of the start time, then press QUICK TIMER.

The hour is set and the minute of the start time turns red.

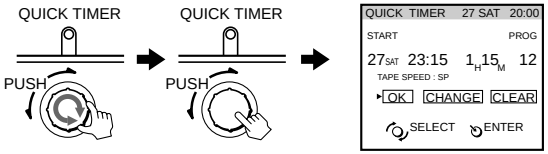


4 Turn QUICK TIMER to set the minute of the start time, then press QUICK TIMER.

5 Use the QUICK TIMER dial to set the recording time period and program position in the same way as in step **3**.

6 Turn QUICK TIMER to move the cursor to OK, then press QUICK TIMER.

The Quick Timer indicator lights up and the video TV enters the timer recording standby mode.



continued

The QUICK TIMER button changes the following when turned clockwise or counterclockwise

- When setting the start time:
  The hour increases or decreases by one hour.
  The minutes increase or decrease by one minute.
- The recording time period:
  Increases or decreases by 15 minutes.
- The program position changes as follows:
  1... ↔ 8... ↔ 12... ↔ 1 ↔ 2 ↔ 0 ↔ 1

If the QUICK TIMER button is pressed

- When the Quick Timer is not set:
  The display for setting the Quick Timer appears.
- When the Quick Timer is set:
  The display for checking the Quick Timer appears.
- When the clock is not set:
  The CLOCK SET display appears.

Note

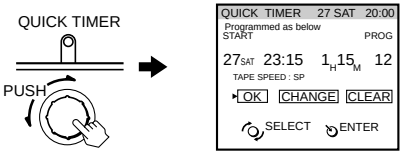
- When you turn QUICK TIMER to move the cursor to OK and then press it, one of the following messages may appear depending on the cassette used. If a message appears, the recording is canceled.
  - Put in a tape. The program recording is canceled.
  - Put in a tape with safety tab. The program recording is canceled.
  - Tape ran out. The program recording is canceled.

  Insert a cassette for recording, rewind the tape and press QUICK TIMER again.

Changing or canceling the Quick Timer settings

1 Press QUICK TIMER.

The QUICK TIMER display appears.



2 Change the settings:

(1) Turn QUICK TIMER to move the cursor to CHANGE, then press QUICK TIMER.

(2) Change the settings according to steps **2** through **7** of "Recording using QUICK-TIMER" on pages 22 and 23.

To cancel the Quick Timer settings

Turn QUICK TIMER to move the cursor to CLEAR, then press QUICK TIMER.

Note

- You cannot cancel the Quick Timer settings with the remote control.

continued

Recording TV programs using the timer

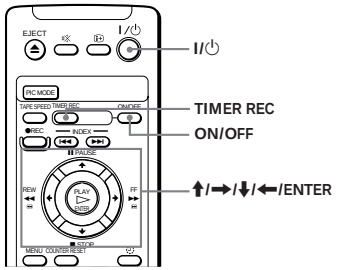
You can preset up to five programs within a one-month period.

Before you begin

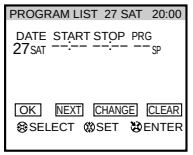
- When the TV is in standby mode (the ⏻ indicator on the video TV is lit in red), press I/⏻ , PROGR +/– or a number button on the remote control.
- Make sure that the clock is set correctly. If it is not, see "Setting the clock" on page 9.
- Make sure that the loaded cassette has its safety tab intact.
- Make sure that the video TV does not enter the timer recording standby mode (the Quick Timer indicator on the video TV should not be lit.)

Setting the timer

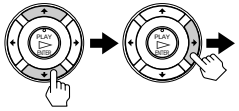
Example: How to record a program broadcast on program position 6 from 21:00 to 22:00 on Sunday, 28th November 1999.

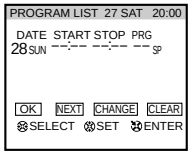


1 Press TIMER REC.



2 Press ↑ or ↓ to set the date , then press →.



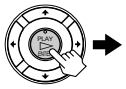


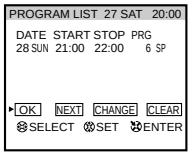
3 Set the recording start time, recording stop time, program position/input (1 or 2) and tape speed in the same way as in step **2**.

4 Press ENTER.

The cursor appears at OK.

For daily and weekly recording, see "Daily/weekly recording" below.





5 Press ← or → to move the cursor to NEXT for other programs, then press ENTER. Repeat steps **2** through **4**.

6 Press ← or → to move the cursor to OK after setting your desired programs, then press ENTER.

The TIMER REC indicator lights up and the video TV enters timer recording standby mode.

If you have made a mistake during timer setting

Press ← to go back to the previous position and correct the setting.

Daily/weekly recording

You can preset your video TV to record the same program every day of the week (daily recording) or the same program on the same day every week (weekly recording). Press ↓ in step **2** until the desired setting appears in the "DATE" position. With each press, the setting changes as follows:

27 (today) → MON–SUN → MON–SAT → MON–FRI → EVERY SAT → EVERY FRI → ... → EVERY SUN → 26 (next month) .....

To stop timer recording

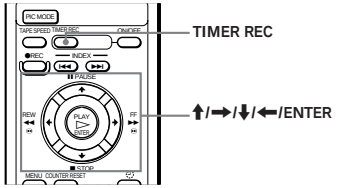
Press ON/OFF.

Using the video TV before timer recording starts

Press ON/OFF to turn off the TIMER REC indicator on the front of the video TV.
Remember to press ON/OFF again to make the TIMER REC indicator light up after setting the recording time.

continued

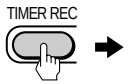
Checking/adding/ changing/canceling the timer settings

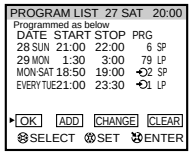


1 Press TIMER REC.

To exit the PROGRAM LIST after checking the settings, skip steps **2** and **3**.

To add, change or clear the settings, follow steps **2** through **4**.





2 Press ← or → to move the cursor to ADD, CHANGE or CLEAR, then press ENTER.

3 To add new settings

Follow steps **2** through **4** of "Setting the timer" on page 26.

To change the settings

Press ↑ or ↓ to move the cursor to the setting you want to change, then press ENTER.
Follow steps **2** through **4** of "Setting the timer" on page 26.

To clear the settings

Press ↑ or ↓ to move the cursor to the setting you want to clear, then press ENTER.
The setting is cleared and "--" appears.

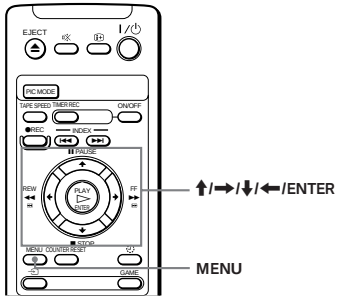
4 Press ← or → to move the cursor to OK, then press ENTER.

If there are other timer settings on the list, the video TV enters the timer recording standby mode and the TIMER REC indicator lights up. The PROGRAM LIST disappears.

When the timer settings overlap

The second program starts recording only after the first program has finished.

Adjusting the TV



Adjusting the volume — INTELLIGENT VOL

Some programs are broadcast at different volume levels. By setting this function to ON, the volume level is stabilized and sudden changes in volume can be prevented.

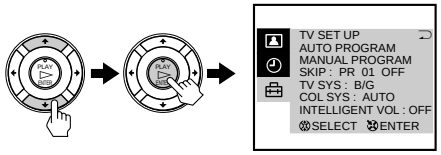
1 Press MENU.

2 Press ↑ or ↓ to select 🖴, then press ENTER.

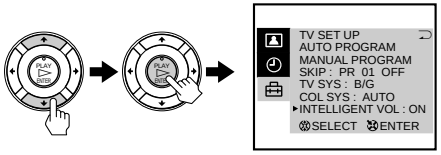
3 Make sure TV SET UP is selected, then press ENTER.

4 Press ↑ or ↓ to select INTELLIGENT VOL , then press ENTER.

The selected item turns red.



5 Press ↑ or ↓ to select ON, then press ENTER.



To return to the normal screen

Press MENU.

continued

Presetting channels manually

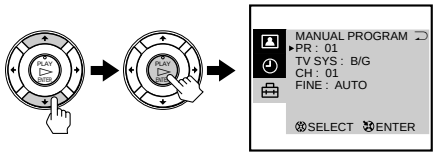
Preset the channels manually if you want to select channels that were not set automatically or if you want to allocate program numbers to channels one by one.

1 Press MENU.

2 Press ↑ or ↓ to select 🖴, then press ENTER.

3 Make sure TV SET UP is selected, then press ENTER.

4 Press ↑ or ↓ to select MANUAL PROGRAM, then press ENTER.



5 Select the program number to which you want to assign a channel number.

(1) Make sure PR is selected, then press ENTER.

(2) Press ↑ or ↓ until the program number you want to preset appears on the menu, then press ENTER.

You can also select the program number with the PROGR +/– or number buttons.

6 Select the desired channel.

(1) Press ↑ or ↓ to select CH, then press ENTER.

(2) Press ↑ or ↓ until the desired channel number appears on the menu, then press ENTER.

You can also select the channel number directly with the number buttons.

Press C (once for regular channels, twice for cable channels), the desired number buttons, then ENTER.

7 If the sound of the desired channel is abnormal, select the appropriate TV system.

(1) Press ↑ or ↓ to select TV SYS, then press ENTER.

(2) Press ↑ or ↓ until the sound becomes normal, then press ENTER.

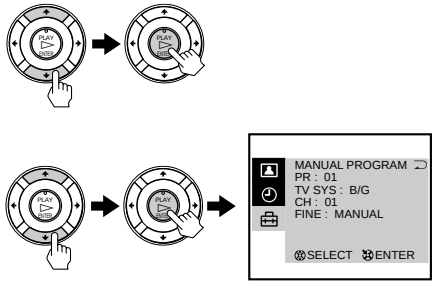
8 If you are not satisfied with the picture and sound quality, you may be able to improve them by using the FINE tuning feature.

(1) Press ↑ or ↓ to select FINE, then press ENTER. The selected item turns red.

(2) Press ↑ or ↓ to select MANUAL, then press ENTER.

(3) Press ↑ or ↓ until the picture and sound quality are optimal, then press ENTER.

FINE tuning can be set between –15 and +15.



To return to the normal screen

Press MENU.

continued

Skipping program positions

You can skip unused program positions when selecting a program with the PROGR +/– buttons. However, the skipped programs may still be called up when you select them with the number buttons.

1 Press MENU.

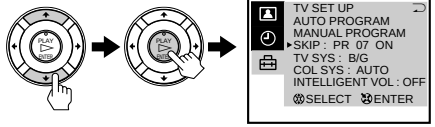
2 Press ↑ or ↓ to select 🖴, then press ENTER.

3 Make sure TV SET UP is selected, then press ENTER.

4 Press ↑ or ↓ to select SKIP, then press ENTER.

5 Press ↑ or ↓ until the program position which you want to skip appears on the menu, then press ENTER.

6 Press ↑ or ↓ to select ON, then press ENTER.



7 Press ENTER and repeat steps **5** and **6** to skip other program positions.

To return to the normal screen

Press MENU.

Adjusting the TV system

If the sound of some channels is abnormal, select the appropriate TV system for your area.

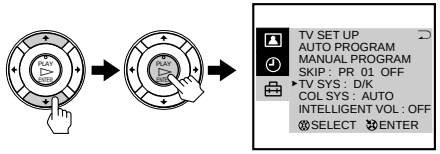
1 Press MENU.

2 Press ↑ or ↓ to select 🖴, then press ENTER.

3 Make sure TV SET UP is selected, then press ENTER.

4 Press ↑ or ↓ to select TV SYS, then press ENTER.

5 Press ↑ or ↓ until the appropriate TV system appears on the menu, then press ENTER.



To return to the normal screen

Press MENU.

continued

Adjusting the color system

Normally set the color system to AUTO. However, when the picture has no color, manually select the appropriate color system for your area.

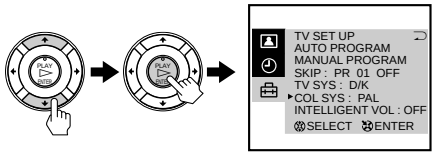
1 Press MENU.

2 Press ↑ or ↓ to select 🧰, then press ENTER.

3 Make sure TV SET UP is selected, then press ENTER.

4 Press ↑ or ↓ to select COL SYS, then press ENTER.

5 Press ↑ or ↓ until the appropriate color system appears, then press ENTER.



To return to the normal screen

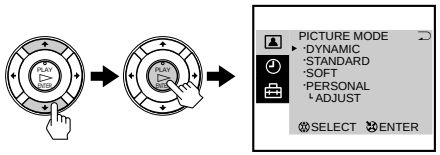
Press MENU.

Changing the PICTURE MODE setting

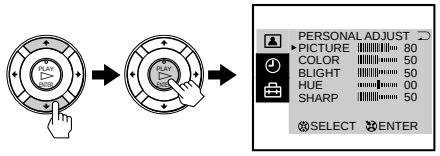
The PICTURE MODE menu allows you to adjust the picture quality.

1 Press MENU.

2 Press ↑ or ↓ to select 👤, then press ENTER.



3 Press ↑ or ↓ to select ADJUST , then press ENTER.



4 Press ↑ or ↓ to select the desired item, then press ENTER.

The adjustment bar for the selected item appears at the bottom of the screen.

5 Adjust the value according to the following table, then press ENTER.

For	Press ↓ to	Press ↑ to
PICTURE	decrease picture contrast	increase picture contrast
COLOR	decrease color intensity	increase color intensity
BRIGHT	darken the picture	brighten the picture
HUE*	increase red picture tones	increase green picture tones
SHARP	soften the picture	sharpen the picture

*You can adjust HUE for the NTSC color system only.

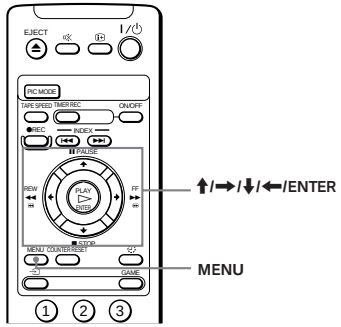
To return to the normal screen

Press MENU.

continued

Adjusting the alignment of the picture

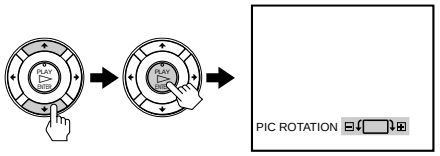
The picture may be out of alignment due to influence from the earth's magnetic field in relation to the position of the TV. You can adjust the angle of the picture if it is not aligned to the TV screen.



1 Press MENU.

2 Press ↑ or ↓ to select 🖷, then press ENTER.

3 Press ↑ or ↓ to select PIC ROTATION, then press ENTER.



4 Press ↑ or ↓ to align the picture's position, then press ENTER.

Tape options

Adjusting the tracking

Adjusting the tracking automatically

The tracking condition is automatically adjusted when this function is set to AUTO.

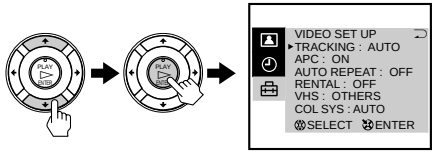
Adjusting the tracking manually

If streaks or snow noise appear during normal playback, adjust the tracking.

1 Press MENU in playback mode.

2 Press ↑ or ↓ to select 🖷, then press ENTER.

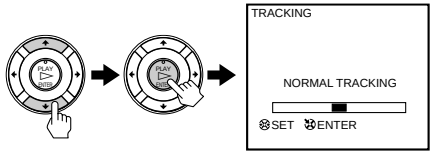
3 Press ↑ or ↓ to select VIDEO SET UP, then press ENTER.



4 Make sure TRACKING is selected, then press ENTER.

5 Press ↑ or ↓ to select MANUAL, then press ENTER.

The tracking meter appears on the screen.



6 Press ← or → to reduce picture noise, then press ENTER.

To return to the normal screen

Press MENU.

continued

Tape options (continued)

Adjusting with Adaptive Picture Control (APC)

This function allows you to improve playback and recording quality automatically according to the condition of the video tape.
This function is set to ON at the factory. To maintain better picture quality, it is advisable to leave the function on. The APC function works on all types of tapes, even on rental tapes.

To change the setting

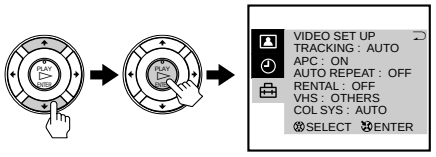
1 Press MENU.

2 Press ↑ or ↓ to select 🖴, then press ENTER.

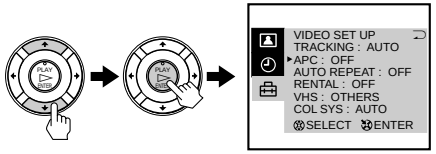
3 Press ↑ or ↓ to select VIDEO SET UP, then press ENTER.

4 Press ↑ or ↓ to select APC, then press ENTER.

The selected item turns red.



5 Press ↑ or ↓ to select OFF, then press ENTER.



To return to the normal screen

Press MENU.

Playing a tape repeatedly

You can play the recorded portion of a tape repeatedly.

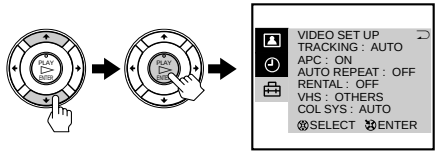
1 Press MENU.

2 Press ↑ or ↓ to select 🖴, then press ENTER.

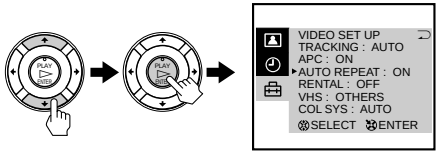
3 Press ↑ or ↓ to select VIDEO SET UP, then press ENTER.

4 Press ↑ or ↓ to select AUTO REPEAT, then press ENTER.

The selected item turns red.



5 Press ↑ or ↓ to select ON, then press ENTER.



6 Press MENU to return to the normal screen.

7 Press PLAY ►.

Playback starts. When the tape reaches its end, the video TV rewinds the tape to the beginning, then plays it again.

continued

Tape options (continued)

Adjusting the picture for rental tapes

If you are not satisfied with the picture quality while playing a tape, even when APC is on, set RENTAL to ON. It is recommended to use this function when watching rental tapes.

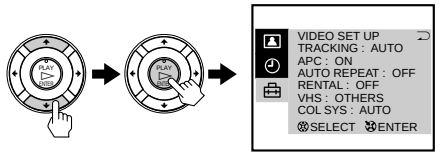
1 Press MENU.

2 Press ↑ or ↓ to select 🧰, then press ENTER.

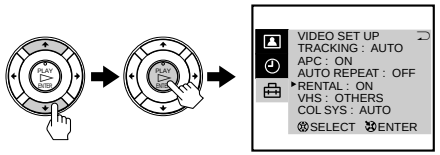
3 Press ↑ or ↓ to select VIDEO SET UP, then press ENTER.

4 Press ↑ or ↓ to select RENTAL, then press ENTER.

The selected item turns red.



5 Press ↑ or ↓ to select ON, then press ENTER.



To return to the normal screen

Press MENU.

When connecting to a Sony VCR

If you use this video TV with another Sony VCR, the remote control may accidentally operate both the video TV and VCR at the same time. To prevent this from happening, set VHS to SONY so that the remote control operates only this video TV.

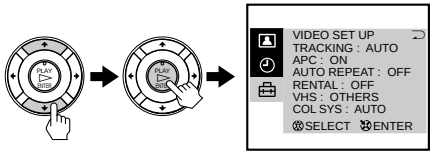
1 Press MENU.

2 Press ↑ or ↓ to select 🧰, then press ENTER.

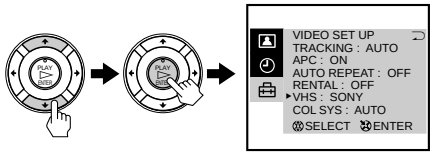
3 Press ↑ or ↓ to select VIDEO SET UP, then press ENTER.

4 Press ↑ or ↓ to select VHS, then press ENTER.

The selected item turns red.



5 Press ↑ or ↓ to select SONY, then press ENTER.



To return to the normal screen

Press MENU.

continued

Tape options (continued)

Setting the color system

Normally set COL SYS in the menu to AUTO. If streaks appear during playback, set COL SYS to correspond to the system that the tape was recorded in.

1 Press MENU.

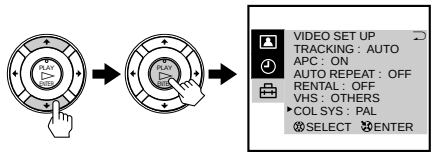
2 Press ↑ or ↓ to select 🖴, then press ENTER.

3 Press ↑ or ↓ to select VIDEO SET UP, then press ENTER.

4 Press ↑ or ↓ to select COL SYS, then press ENTER.

5 Press ↑ or ↓ until the corresponding color system appears, then press ENTER.

Select the same color system that the tape was recorded in.



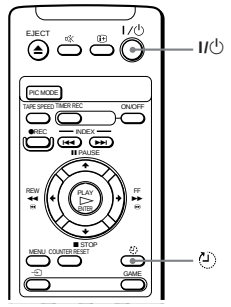
To return to the normal screen

Press MENU.

– 27 –

Switching off automatically —SLEEP

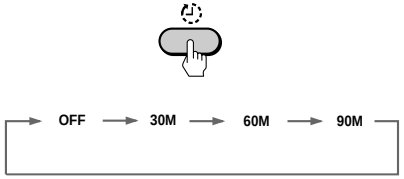
You can automatically switch the video TV into standby mode after a selected time period.



Press ⏲.

With each press, the time period (in minutes) changes as illustrated.

One minute before the TV switches into standby mode, the message "SLEEP TIMER: 1M" is displayed on the screen.

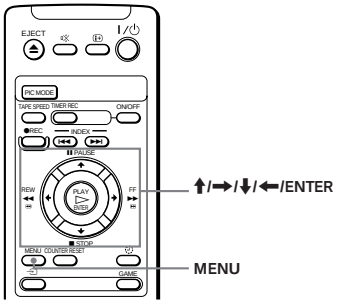


To cancel the timer

Press ⏲ to select OFF or press I/⏻ to turn on the power.

Switching on automatically — ON TIMER

You can preset your video TV to automatically switch on at a desired time. You can select the TV program, video playback or input source to be switched on.



1 Press MENU.

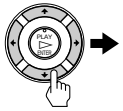
2 Press ↑ or ↓ to select 🕘, then press ENTER.

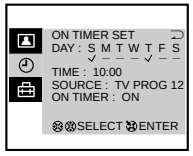
3 Make sure ON TIMER SET is selected, then press ENTER.

4 Make sure that the cursor appears at DAY, then press ENTER.

The selected item turns red.

5 Press ↑, ↓, ← or → to set the timer on (✓) or off (–) for each day of the week.





6 Press ↑ or ↓ to select TIME, then press ENTER.

7 Press ↑ or ↓ to set the on-time hour and minute, then press ENTER.

8 Press ↑ or ↓ to select SOURCE, then press ENTER.

9 Press ↑ or ↓ to set the source to be switched on, then press ENTER.

The SOURCE changes as follows.

TV PROG → VCR ► (video playback)

If you select TV PROG, press ↑ or ↓ to change the channel numbers. Then press ENTER again.

10 Press ↑ or ↓ to select ON TIMER, then press ENTER.

11 Press ↑ or ↓ to set ON TIMER to ON, then press ENTER.

12 Press MENU to return to the normal screen.

The 🕘 indicator on the video TV lights up.

To cancel the on-timer function

In step **11**, press ↑ or ↓ to set ON TIMER to OFF, then press ENTER.

The 🕘 indicator on the video TV turns off.

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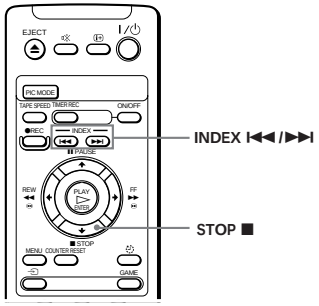
Searching using the index function

The video TV marks the tape with an index signal at the point where each recording begins. Use these signals as references to find a specific recording. This video TV can search up to 99 index signals ahead of or behind the current position.

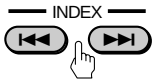


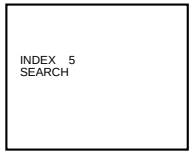
1 Insert an indexed tape.

2 Press INDEX I◄◄ /►►I repeatedly to specify how many index signals ahead or behind you want to search.

To search ahead, press INDEX ►►I.

To search backwards, press INDEX I◄◄.





The video TV starts searching and the index number on the TV screen counts down to zero. Playback starts automatically from that point.

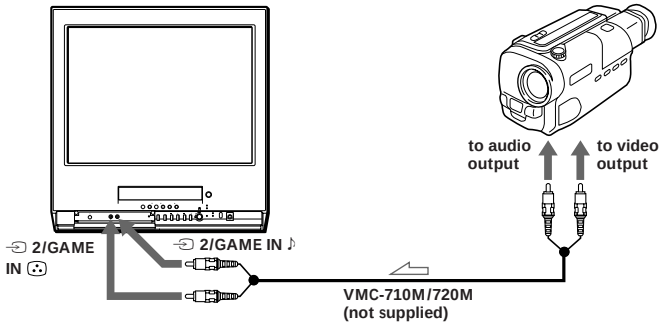
To stop searching

Press STOP ■.

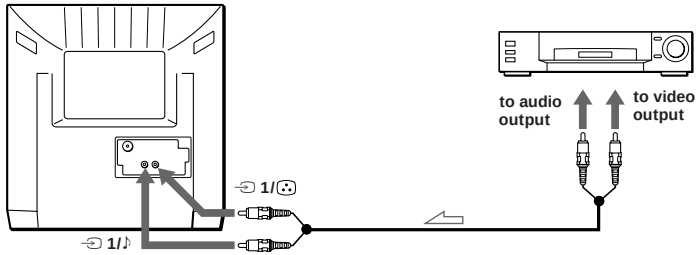
Connecting optional equipment

Watching and recording the picture input from optional equipment

To connect a video camera



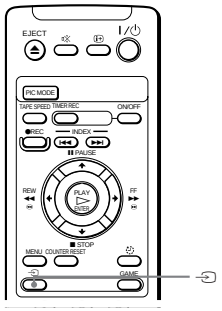
To connect a VCR



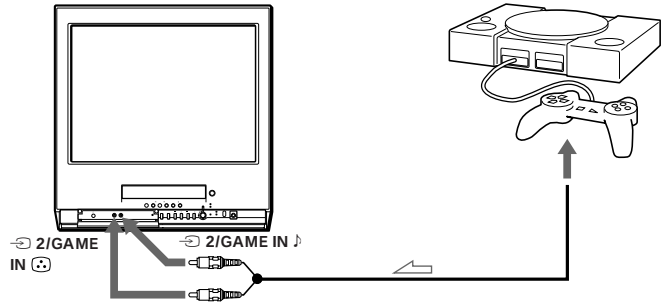
continued

To watch the video input signal

Press → so that →1 or →2 appears on the screen.

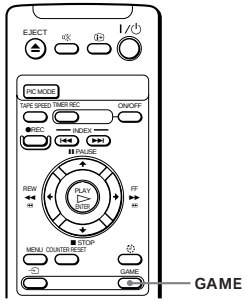


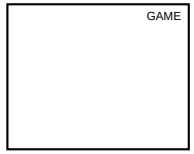
To connect a video game



To display the video game screen

Press GAME when the video TV is in standby mode.





To switch to a TV program

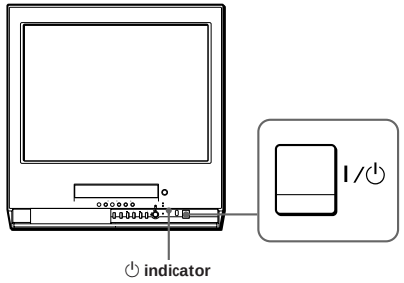
Press the number button on the remote control, PROGR +/– or → on the video TV or remote control.

To switch to the VCR

Press the PLAY ► button on the video TV or remote control when a cassette is in the video TV.

Self-diagnosis function

Your video TV is equipped with a self-diagnosis function. If there is a problem with your video TV, the ⏻ indicator flashes in red. The number of times the indicator flashes indicates the possible causes.



1 Check that the ⏻ indicator flashes red once or more in intervals of 3 seconds.

2 Count the number of times the indicator flashes.

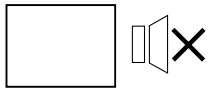
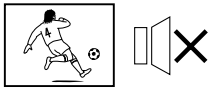
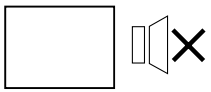
3 Press I/⏻ to turn off your video TV.

4 Inform your nearest Sony service facility about the number of times the indicator flashes.

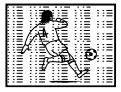
Be sure to note the model name and serial number located on the rear of your video TV.

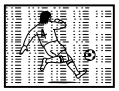
Troubleshooting

If you have any problems while viewing your video TV, please check the following troubleshooting guide. If the problem persists, contact your Sony dealer.

Symptom	Possible cause	Solutions
TV section		
No picture/No sound 	The power cord or antenna is not connected.	Check the AC power cord and the antenna connections.
	The video TV is not turned on.	Press I/⏻ on the video TV. If the standby indicator (⏻) is lit in red, press I/⏻ or a program number button on the remote control.
Good picture/No sound 	The volume level is too low.	Press + to increase the volume level.
	The sound is muted.	Press to cancel the muting.
	Headphones are connected to ∩ (headphones) jack.	Disconnect the headphones.
No color or poor color 	The color level setting is too low.	Adjust PICTURE, COLOR and BRIGHT in the PERSONAL ADJUST menu. (page 35)
	The picture setting is inappropriate.	Press PIC MODE to switch the picture setting. (page 15)
	The color system setting is inappropriate.	Display the TV SET UP menu and check the color system (COL SYS) setting. (page 34)
	The antenna direction, position and angle need adjustment.	Adjust the antenna direction, position and angle. Contact a Sony dealer for advice.
Double images or "ghosts" 	Broadcast signals are reflected by nearby mountains or buildings.	Use a highly directional antenna.
	The antenna direction, position and angle need adjustment.	Adjust the antenna direction, position and angle. Contact a Sony dealer for advice.
No picture/No sound from video input sources 	The connecting cord between the video TV and the input sources is disconnected.	Check the connection between the video TV and the input sources.
	Input is not selected correctly.	Press so that "1" or "2" appears. (page 48)

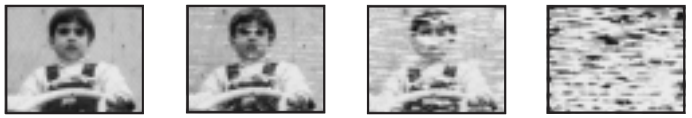
continued

Symptom	Possible cause	Solutions
Good picture/Abnormal sound 	The TV system setting is inappropriate.	• If the sound of all the channels is abnormal, display the TV SET UP menu and select the appropriate TV system (TV SYS), then preset the channels again. (pages 11 and 12) • If the sound of some channels is abnormal, display the MANUAL PROGRAM menu in the TV SET UP menu and select the appropriate TV system (TV SYS) (page 30).
Snowy picture/Abnormal sound 	The connection is loose or the cable is damaged.	Check the antenna cable and connection on the video TV and at the wall.
	The channel presetting is inappropriate or incomplete.	Display the TV SET UP menu and select MANUAL PROGRAM to manually preset the channel again.
	The antenna type is inappropriate.	Check the antenna type (VHF/UHF). Contact a Sony dealer for advice.
	The antenna direction, position and angle need adjustment.	Adjust the antenna direction, position and angle. Contact a Sony dealer for advice.
Dotted lines or stripes 	There is local interference from cars, neon signs, hair dryers, power generators, etc.	• Do not use a hair dryer or other equipment near the video TV. • Adjust the antenna direction, position and angle for minimum interference. Contact a Sony dealer for advice.
Abnormal color patches 	There is magnetic disturbance from external speakers or other equipment.	Locate external speakers or other equipment away from the video TV. Press I/⏻ on the video TV to turn off the video TV for about five minutes, then turn on again.
Clock and timer section		
The clock has stopped and "--:--" is displayed.	The power has been interrupted or the AC power cord is disconnected.	Re-set the clock and timer settings. (page 9)

Symptom	Possible cause	Solutions
Playback section		
Power is on, but the tape does not run.	The safety device has been activated.	Switch off, disconnect the AC power cord, and leave the set for about one minute.
Poor playback picture 	The color system setting is inappropriate.	Display VIDEO SET UP and set the color system (COL SYS) to the setting corresponding to the color system that the tape is recorded in. (page 42)
	The tracking condition is inappropriate.	Adjust the tracking manually. (page 37)
	The video heads are dirty.	Clean the video heads using the Sony T-25CLD, T-25CLDR, or T-25CLW video head cleaning cassette (not supplied). If these cleaning cassettes are not available in your area, have the heads cleaned at your nearest Sony service facility (a standard service fee will be charged). Do not use any commercially available liquid type cleaning cassettes other than Sony's, as it may damage the video heads.
	The video heads may be worn out.	The video heads may have to be replaced. Contact a Sony dealer for advice.
	The tape is worn out.	Use a new tape.
The sound drops out.	The tape is defective.	Use a new tape.

Symptoms caused by contaminated video heads

• **Normal picture** • **Rough picture** •**Unclear picture** • **No picture (or black & white screen appears)**



initial contamination → **terminal**

continued

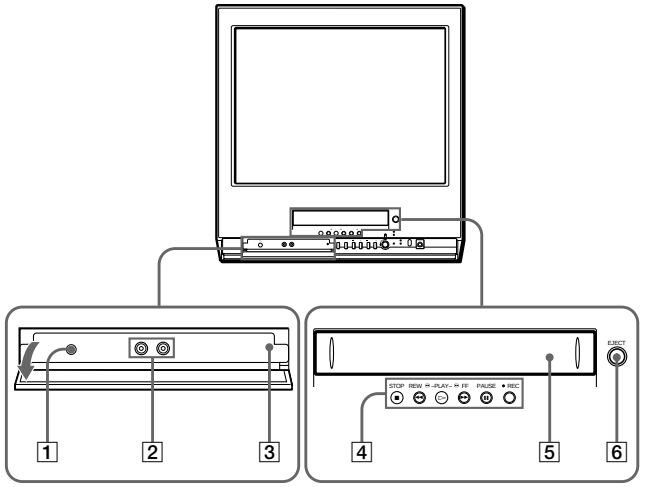
Troubleshooting (continued)

Symptom	Possible cause	Solutions
Recording section		
The cassette is ejected when you press REC ●.	The safety tab of the cassette has been removed.	Cover the safety tab hole with adhesive tape, or use another cassette with its safety tab intact.
Cannot record.	No cassette has been inserted.	Insert a cassette with its safety tab intact.
	The tape is at its end.	Rewind the tape.
Timer recording section		
Cannot program a recording using the timer.	The clock has not been set.	Set the current time and date. (page 9)
The cassette is ejected when you press ON/OFF.	The safety tab of the cassette has been removed.	Cover the tab hole with adhesive tape, or use another cassette with its safety tab in place.
The TIMER REC indicator does not light up even though you press ON/OFF.	No cassette has been inserted.	Insert a cassette with its safety tab intact.
	The tape is at its end.	Rewind the tape.
	No setting is made for timer recording.	Set the program for timer recording. (pages 26 through 27)
Timer recording was not made.	• You did not press ON/OFF. • There has been a power interruption.	—
Others		
A cassette cannot be inserted.	Another cassette is already inserted.	Press EJECT ⏏ to eject the cassette.
The remote control does not work.	The batteries are low.	Replace the batteries. (page 4)
	The batteries are installed incorrectly.	Install the batteries with correct polarities. (page 4)
TV cabinet creaks.	Changes in room temperature sometimes make the TV cabinet expand or contract, causing a noise. This does not indicate a malfunction.	—
A small "boom" sound is heard when the video TV is turned on.	The video TV's demagnetizing function is working. This does not indicate a malfunction.	—

Identifying parts and controls

Refer to the pages indicated in parentheses ( ) for details.

Front panel



1 🎧 (headphones) jack

2 2/GAME IN jacks (📹 (video)/♪ (audio)) (47, 48)

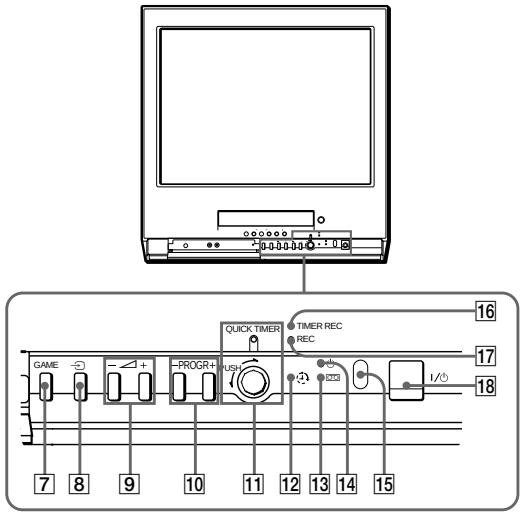
3 TUNER PRESET ON/OFF button (12, 13)

4 Tape transport buttons
STOP ■ button (17, 20)
REW ◀◀/⏮ button (17)
PLAY ▶ button (17)
FF ▶▶/⏭ button (17)
PAUSE ❚❚ button (17, 20)
REC ● button (20)

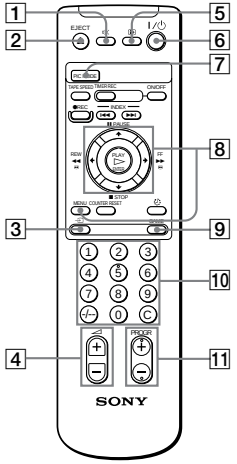
5 Cassette compartment

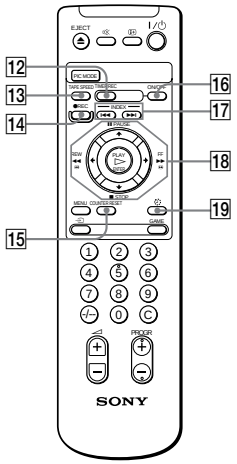
6 EJECT ⏏ button (17)

continued



7 GAME button (13, 49)
8 (input select) button (48)
9 (volume) +/– buttons (15)
10 PROGR +/– buttons (14)
11 QUICK TIMER (22, 23)
Indicator
Rotary button
12 (ON TIMER) indicator (44)
13 (VCR) indicator (20)
14 (standby) indicator (14)
15 Remote control sensor
16 TIMER REC (recording) indicator (27)
17 REC (recording) indicator (20)
18 I/ (power/standby) switch (14)





1 (muting) button (15)
2 EJECT ⏏ button (17)
3 (input select) button (48)
4 (volume) +/– buttons (15)
5 (display) button (16, 18)
6 I/ (power/standby) button (14)
7 PIC MODE (picture mode) button (15)
8 Menu operation buttons (26)
MENU button
↑/←/↓/→ buttons
ENTER button
9 GAME button (49)
10 Number buttons (19)
11 PROGR +/– buttons (19)
12 TIMER REC (recording) button (26)
13 TAPE SPEED button (19)
14 REC ● (recording) button (20)
15 COUNTER RESET button (18)
16 ON/OFF button (for timer recording) (27)
17 INDEX ⏮/⏭ button (46)
18 Tape transport buttons
PAUSE ❚❚ button (17, 20)
REW ◀◀/⏪ button (17)
STOP ■ button (17, 20)
FF ▶▶/⏩ button (17)
PLAY ▶ button (17)
19 (SEEEP TIMER) button (43)

continued

Getting Started

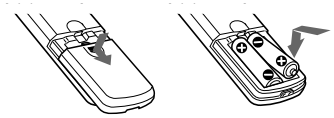
Step 1: Preparation

Check the supplied accessories

When you have taken everything out of the carton, check that you have these items:

- Remote control
- Two R6 (size AA) batteries
- Stabilizer band
- Two clamps
- Two wood screws
- These operating instructions

Insert the batteries into the remote control



Note

- Do not use old batteries or different types of batteries together.

Step 2: Installing the video TV

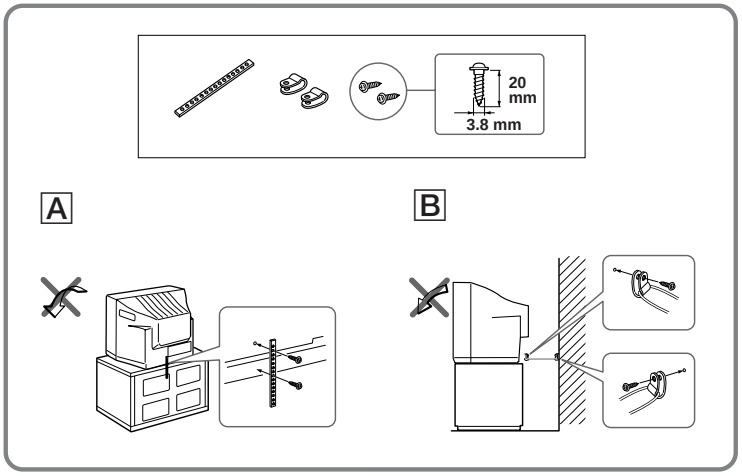
Secure the video TV

To prevent the video TV from falling, secure it using one of the following methods:

A With the supplied screws, attach the stabilizer band to the TV stand and to the rear of the video TV using the existing hole.

OR

B Pass a cord or chain through the clamps and secure them to the rear of the video TV and a wall or pillar.



Getting Started

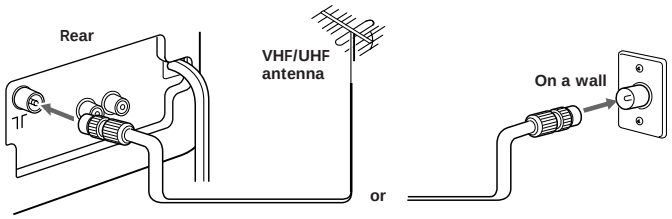
Step 3: Connecting the antenna

For better TV reception and clear recordings, connect an outdoor antenna to your video TV.

Connecting an outdoor antenna

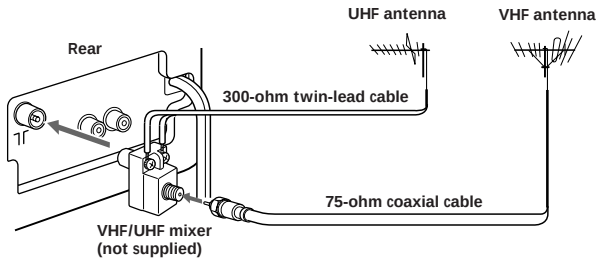
To connect a VHF antenna or a combination VHF/UHF antenna—75-ohm coaxial cable (round)

Attach an IEC antenna connector to the 75-ohm coaxial cable.
Plug the connector into the ⅂ (antenna) socket of the video TV.



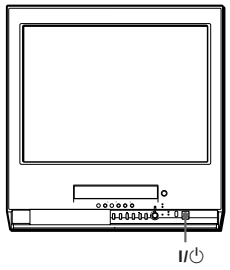
To connect both VHF and UHF antennas

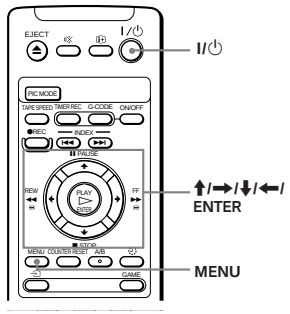
Attach the antenna cable ends to the VHF/UHF mixer (not supplied).
Plug the mixer into the ⅂ (antenna) socket of the video TV.



Step 4: Selecting the language

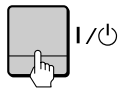
You can change the menu and on-screen information language to Chinese.



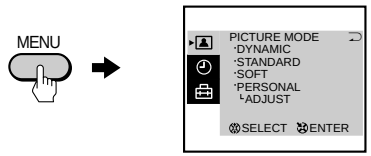


1 Press I/⏻ to turn on the video TV.

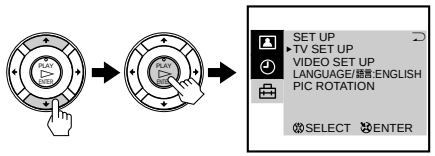
When the TV is in standby mode (the ⏻ indicator on the video TV is lit in red), press I/⏻, PROGR +/– or a number button on the remote control.



2 Press MENU.



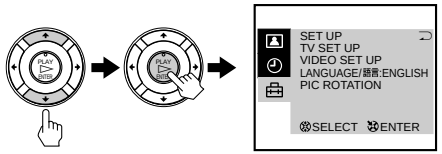
3 Press ↑ or ↓ to select 🧰, then press ENTER.



continued

Step 4: Selecting the language (continued)

4 Press ↑ or ↓ to select LANGUAGE/ 語言, then press ENTER.
The selected item turns red.



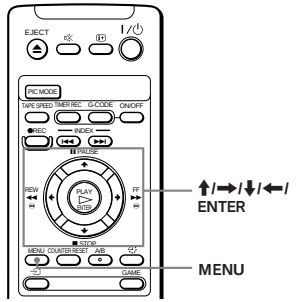
5 Press ↑ or ↓ to select 中文, then press ENTER.
The menu language changes to Chinese.

To return to the normal screen

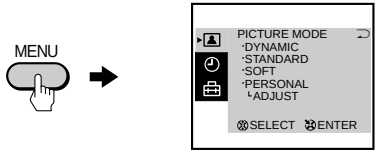
Press MENU.

Step 5: Setting the clock

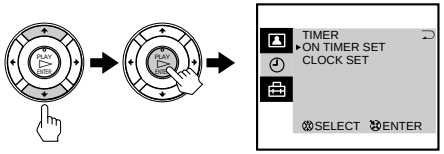
You need to set the clock to use timer recording, Quick-Timer recording and on-timer functions.



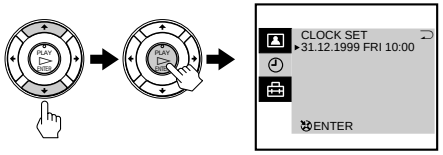
1 Press MENU.



2 Press ↑ or ↓ to select 🕘, then press ENTER.

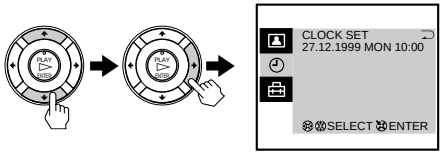


3 Press ↑ or ↓ to select CLOCK SET , then press ENTER.



4 Press ENTER.
The day section turns red.

5 Press ↑ or ↓ to set the day, then press →.
The month section turns red.



continued

Step 5: Setting the clock (continued)

6 Press ↑, ↓ or → to set the month, year, hour and minutes in the same way as in step **5**, then press ENTER.

The clock starts working.

To return to the normal screen

Press MENU.

If you have made a mistake while setting the clock

Press ← to go back to the item to be changed and set the correct digits using ↑ or ↓, then press →.

Note

- If power is interrupted or you disconnect the AC power cord, you have to re-set the clock.

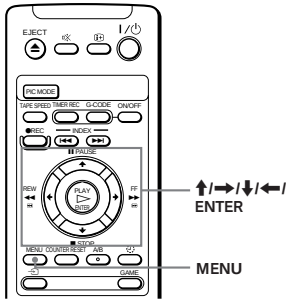
Step 6: Setting the channels

Presetting channels automatically

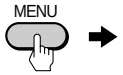
You can preset up to 100 channels.

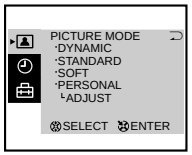
Automatic presetting is the easiest way to setup your video TV if you want to preset all receivable channels at once.

To preset the channels manually, see page 34.

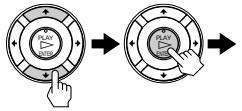


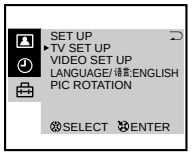
1 Press MENU.



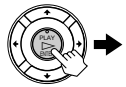


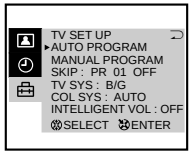
2 Press ↑ or ↓ to select 🖷, then press ENTER.





3 Make sure TV SET UP is selected, then press ENTER.

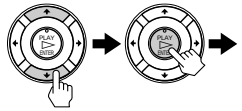


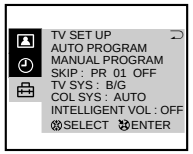


4 Press ↑ or ↓ to select TV SYS, then press ENTER.

The selected item turns red.

Press ↑ or ↓ to select the TV system (B/G, I, D/K or M) and press ENTER.

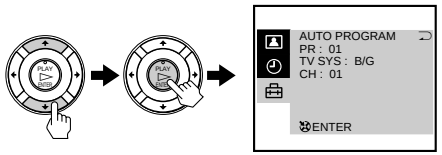




continued

Step 6: Setting the channels (continued)

5 Press ↑ or ↓ to select AUTO PROGRAM, then press ENTER.

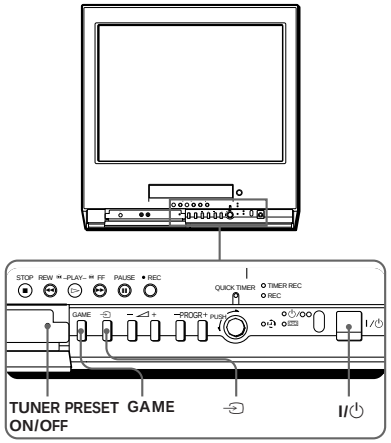


Presetting starts from program position 1. The preset program and channel numbers are displayed on the screen in sequence.
When presetting is finished, program position 1 appears again. All available channels are now stored on successive number buttons.

Tip

- To stop automatic channel presetting, press MENU.

Presetting channels automatically using the TUNER PRESET ON/OFF button on the video TV



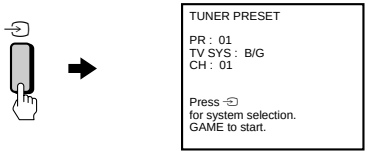
1 Press I/⏻ to turn on the video TV.

When the TV is in standby mode (the ⏻ indicator on the video TV is lit in red), press I/⏻, PROGR +/– or a number button on the remote control.

2 Press TUNER PRESET ON/OFF with a pointed object.

Do not use an item (such as a pencil) that might break off when inserted.

3 Press ⏎ to select the TV system of the channels which you want to preset.



4 Press GAME.

Presetting starts from program position 1. The preset program and channel numbers are displayed on the screen in sequence.

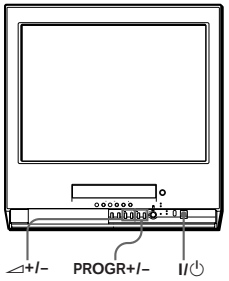
When presetting is finished, program position 1 appears again. All available channels are now stored on successive number buttons.

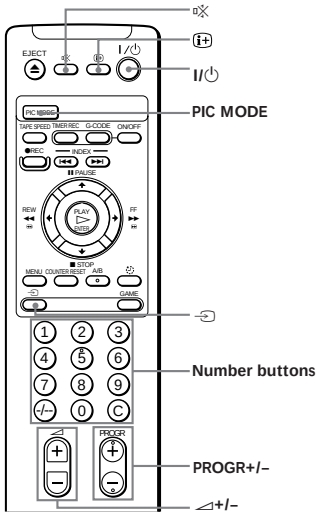
Getting Started

– 39 –

Watching the TV

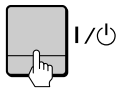
This section explains various functions used while watching the TV. Most operations can be done using the remote control.





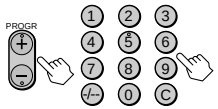
1 Press I/⏻ to turn on the video TV.

When the TV is in standby mode (the ⏻ indicator on the video TV is lit in red), press I/⏻ on the remote control.



2 Press PROGR +/– or the number buttons to select the TV channel.

For double digit numbers, press -/--, then the numbers (e.g., for 25, press -/--, then 2 and 5).



Note

- You can also select the channel number directly with the number buttons. Press C (once for regular channels, twice for cable channels), the desired number buttons, then ENTER.

Additional tasks

To	Press
Turn off temporarily	I/⏻ on the remote control. The ⏻ indicator on the video TV lights up in red.
Turn off the main power	I/⏻ on the video TV. The ⏻ indicator on the video TV lights up in orange.
Adjust the volume	+/–.
Mute the sound	.
Watch the video input (from a connected VCR, camcorder, etc.)	to select "1" or "2"(see page 53). To return to the TV screen, press again.

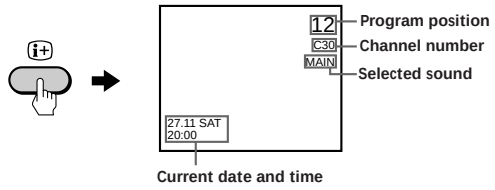
Selecting the picture mode

Press PIC MODE repeatedly until the desired picture mode is selected.

Select	To
DYNAMIC	receive high contrast pictures.
STANDARD	receive normal contrast pictures.
SOFT	receive low contrast pictures.
PERSONAL	receive the latest picture settings from the ADJUST option in the PICTURE MODE menu (see page 39).

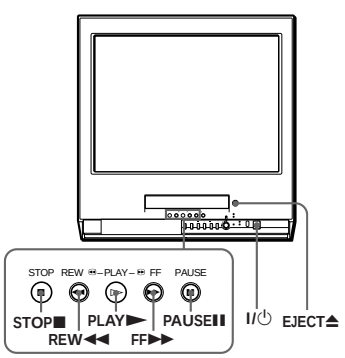
Displaying on-screen information

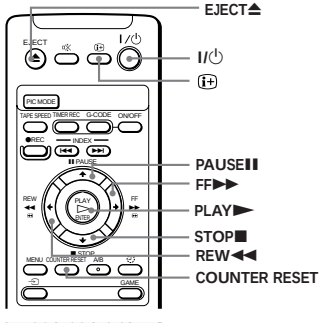
Press to display the following on-screen information.
To have the program number and channel number stay on the screen, press again.
To make the information disappear, press until no information is displayed on the screen.



Playing a tape

This section shows you how to play a tape. Other convenient functions you can use while playing a tape are explained in "Additional Operations."





1 Press I/⏻ to turn on the video TV.

When the TV is in standby mode (the ⏻ indicator on the video TV is lit in red), skip this step.

2 Insert a cassette.

If you insert a cassette with its safety tab removed, playback starts automatically.

3 Press PLAY ►.

Playback starts. On-screen information is displayed for a few seconds.

Note

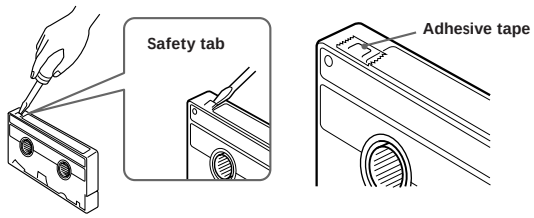
- The picture's color may be affected when playing a MESECAM-recorded tape in the LP mode.

Additional tasks

To	Press
stop playback	STOP ■. The video TV goes back to the normal TV picture.
stop playback for a moment	PAUSE ❚❚. Press PAUSE ❚❚ again or press PLAY ► to resume playback. If you leave your video TV in pause mode, normal playback resumes after about 5 minutes to prevent tape damage.
search a tape at high speed	REW ◄◄ (rewind) or FF ►► (fast-forward) during playback. To resume normal playback, press PLAY ►.
fast-forward the tape	STOP ■, then press FF ►►.
rewind the tape	STOP ■, then press REW ◄◄.
view the picture in fast-forward or rewind mode	and hold FF ►► during fast-forward or REW ◄◄ during rewind. When you release the button, fast-forward or rewind mode is resumed.
eject a cassette	EJECT ≜. You can eject the cassette even if the power is off.

Protecting your cassette against accidental erasure

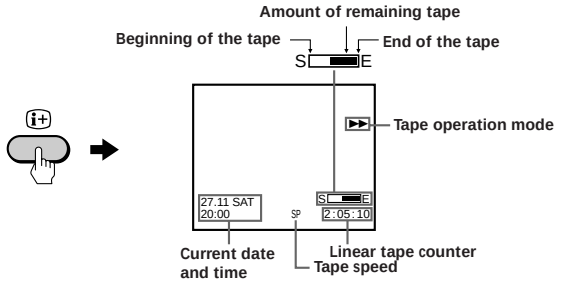
To prevent accidental erasure, break off the safety tab as illustrated. To record on a cassette without a safety tab, simply cover the tab hole with adhesive tape.



continued

Displaying on-screen information

Press (i+) to display the following on-screen information. To show only the amount of remaining tape and the linear tape counter on the screen, press (i+) again.
To make the information disappear, press (i+) until no information is displayed on the screen.

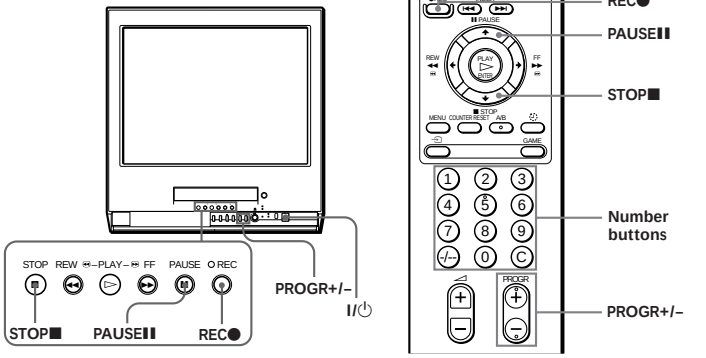


Resetting the tape counter

The tape counter helps you to locate a certain scene after playback. Press COUNTER RESET on the remote control to set the counter to "0:00:00" before playing a tape. The tape counter is automatically reset to zero whenever a cassette is inserted. The video TV keeps counting the length of the tape being played. Note, however, that the tape counter does not count the portions that do not contain any recordings.

Recording TV programs

Recording TV programs



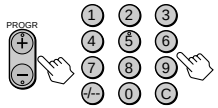
1 Press I/⏻ to turn on the video TV.

If the TV is in standby mode (the ⏻ indicator on the video TV is lit in red), the video TV will turn on automatically when a cassette is inserted.

2 Insert a cassette with a safety tab.

3 Press PROGR+/– or the number buttons to select the program position.

For double digit numbers, press -/--, then press the numbers (e.g., for 25, press -/--, then 2 and 5).



4 Press TAPE SPEED to select the tape speed.

For details about the tape speed, see "Selecting the tape speed" on page 21.

continued

5 Press REC ●.

The REC indicator lights up and recording begins.

Note

- You can also select the channel number directly with the number buttons. Press C (once for regular channels, twice for cable channels), the desired number buttons, then ENTER.

To stop recording

Press STOP ■.
When the tape reaches the end, the video TV rewinds the tape automatically to the beginning, then stops. This function does not work when the power of the video TV is off.

To pause recording

You can cut out an unwanted scene during recording with this button.

1 Press PAUSE ❚❚ when an unwanted scene appears on the screen. Recording pauses.

2 Press PAUSE ❚❚ again to release the pause mode at the end of the unwanted scene.
Recording resumes from the point set in step 1.

When the recording pause mode lasts for about 5 minutes, the video TV stops recording to prevent tape damage.

Recording with the TV off

Press I/⏻ on the video TV.
The video TV is turned off and the ⏺ indicator lights up.
The video TV continues recording.

Selecting the tape speed

The chart below shows the recording/playback time available in each mode.

PAL, MESECAM

Cassette tape	Tape speed setting	
	SP mode	LP mode
E-30	30 min.	1 hr.
E-60	1 hr.	2 hrs.
E-90	1 hr 30 min.	3 hrs.
E-120	2 hrs.	4 hrs.
E-150	2 hrs 30 min.	5 hrs.
E-180	3 hrs.	6 hrs.
E-195	3 hrs 15 min.	6 hrs 30 min.
E-210	3 hrs 30 min.	7 hrs.
E-240	4 hrs.	8 hrs.

NTSC

Cassette tape	Tape speed setting	
	SP mode	EP mode
T-30	30 min.	1 hr 30 min.
T-60	1 hr.	3 hrs.
T-120	2 hrs.	6 hrs.
T-160	2 hrs 40 min.	8 hrs.
T-180	3 hrs.	9 hrs.

Notes

- In the SP mode, the tape runs twice as fast as the LP mode, and three times as fast as the EP mode.
- When a PAL format cassette is used with the NTSC system for recording, the actual recording time is shorter than the standard recording time stipulated on the cassette.

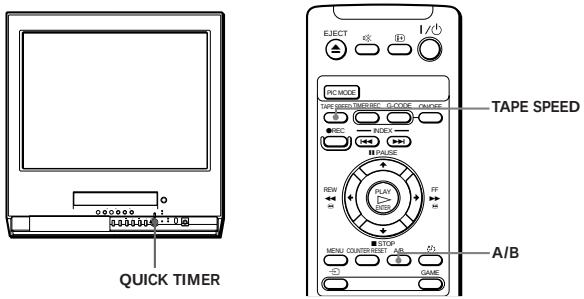
continued

Recording using QUICK-TIMER

The Quick-Timer recording function allows you to preset your video TV to record one program within a 24-hour period. For setting the Quick-Timer, use QUICK TIMER on the video TV.

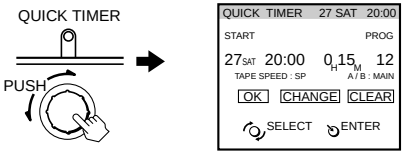
Before you begin

- Make sure that the clock is set correctly. If it is not, see "Setting the clock" on page 9.
- Make sure that the loaded cassette has its safety tab intact.
- Make sure that the video TV does not enter the timer recording standby mode (the TIMER REC indicator on the video TV should not be lit.)



1 Press QUICK TIMER.

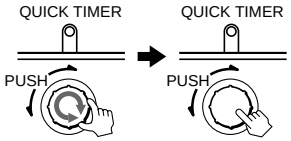
When the TV is in standby mode (the ⏻ indicator on the video TV is lit in red), the power is turned on automatically.



2 Press TAPE SPEED to select the tape speed, SP or LP. EP cannot be selected when making timer recordings.

3 Turn QUICK TIMER to set the hour of the start time, then press QUICK TIMER.

The hour is set and the minute of the start time turns red.



4 Turn QUICK TIMER to set the minute of the start time, then press QUICK TIMER.

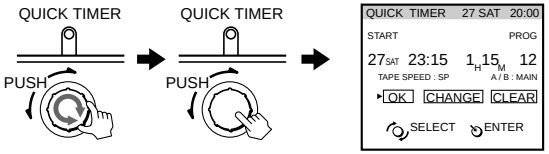
5 Use the QUICK TIMER dial to set the recording time period and program position in the same way as in step **3**.

6 Press A/B to select the sound mode MAIN or SUB.

For details on the sound mode, see "Selecting a bilingual program" on page 47.

7 Turn QUICK TIMER to move the cursor to OK, then press QUICK TIMER.

The Quick Timer indicator lights up and the video TV enters the timer recording standby mode.



continued

Recording TV programs (continued)

The QUICK TIMER button changes the following when turned clockwise or counterclockwise

- When setting the start time:
  The hour increases or decreases by one hour.
  The minutes increase or decrease by one minute.
- The recording time period:
  Increases or decreases by 15 minutes.
- The program position changes as follows:
  1... ↔ 8... ↔ 12... ↔ 1 ↔ 2 ↔ 0 ↔1

If the QUICK TIMER button is pressed

- When the Quick Timer is not set:
  The display for setting the Quick Timer appears.
- When the Quick Timer is set:
  The display for checking the Quick Timer appears.
- When the clock is not set:
  The CLOCK SET display appears.

Note

- When you turn QUICK TIMER to move the cursor to OK and then press it, one of the following messages may appear depending on the cassette used. If a message appears, the recording is canceled.
  - Put in a tape. The program recording is canceled.
  - Put in a tape with safety tab. The program recording is canceled.
  - Tape ran out. The program recording is canceled.

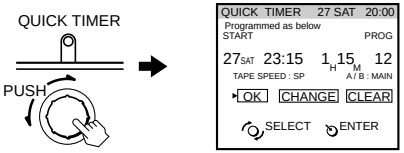
  Insert a cassette for recording, rewind the tape and press QUICK TIMER again.

– 45 –

Changing or canceling the Quick Timer settings

1 Press QUICK TIMER.

The QUICK TIMER display appears.



2 Change the settings:

(1) Turn QUICK TIMER to move the cursor to CHANGE, then press QUICK TIMER.

(2) Change the settings according to steps **2** through **7** of "Recording using QUICK-TIMER" on pages 22 and 23.

To cancel the Quick Timer settings

Turn QUICK TIMER to move the cursor to CLEAR, then press QUICK TIMER.

Note

- You cannot cancel the Quick Timer settings with the remote control.

continued

Recording TV programs using the G-CODE system

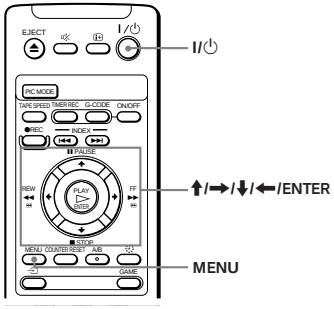
The G-CODE system allows you to simplify the task of programming your video TV to make recordings with the timer. Whenever you want to record a TV program, all you need to do is look up the program's G-CODE number, a number assigned to each program published in the TV section of most newspapers and cable TV listings. Then, just enter the tape speed, sound mode, and the G-CODE number of the program that you want and the video TV is automatically programmed to record that show.

Setting up the G-CODE system

Setting up your video TV involves coordinating the program number (the number you turn to on your video TV to watch a program) with the guide channel number (the number that's assigned to that channel in your program guide). For a listing of the guide channel numbers, look in a program guide for your area that features G-CODE numbers.

Before you begin

- When the TV is in standby mode (the ⏻ indicator on the video TV is lit in red), press **I**/⏻, PROGR +/– or a number button on the remote control.

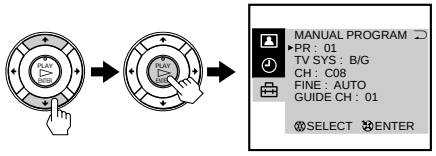


1 Press MENU.

2 Press ↑ or ↓ to select 🖷, then press ENTER.

3 Make sure TV SET UP is selected, then press ENTER.

4 Press ↑ or ↓ to select MANUAL PROGRAM, then press ENTER.

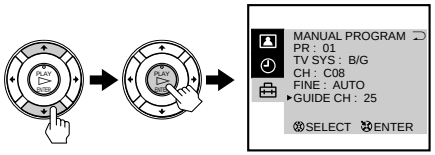


5 Make sure PR is selected, then press ENTER.

6 Press ↑ or ↓ to display the program number to which you want to assign a guide channel number, then press ENTER.

7 Press ↑ or ↓ to select GUIDE CH, then press ENTER.

8 Press ↑ or ↓ to select the guide channel number listed in a program guide for your area, then press ENTER.



9 Press ↑ or ↓ to select PR, then press ENTER and repeat steps **6** through **8** to set the guide channel number of other channels.

To return to the normal screen

Press MENU.

Note

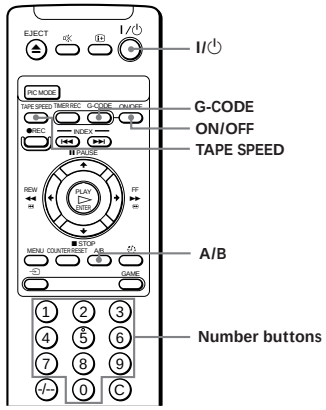
- Do not change the CH (channel) settings here.
  If you want to reassign the channel settings to the program numbers, see "Presetting channels manually" on page 34.

continued

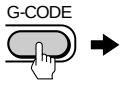
Recording TV programs using the G-CODE system

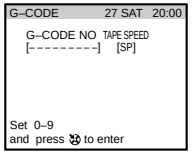
Before you begin

- When the TV is in standby mode (the ⏻ indicator on the video TV is lit in red), press I/⏻, PROGR +/– or a number button on the remote control.
- Make sure that the clock is set correctly. If it is not, see "Setting the clock" on page 9.
- Make sure that the loaded cassette has its safety tab intact.
- Make sure that the video TV does not enter the timer recording standby mode (the QUICK TIMER indicator on the video TV should not be lit.)



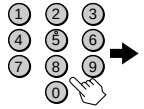
1 Press the G-CODE button.

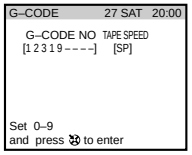




2 Press TAPE SPEED to select the tape speed, SP or LP.
EP cannot be selected when making timer recordings.

3 Press the number buttons to enter the program's G-CODE number.

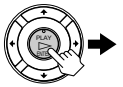


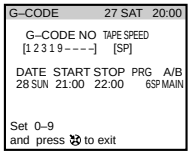


4 Press ENTER.

The date, start and stop times, program position, tape speed and sound mode appears on the TV screen.

If you want to change the sound mode, press A/B to select MAIN or SUB.





5 Repeat steps **2** through **4** to enter other settings.

You can set up to five programs in a one month period using both the G-CODE setting and the timer setting.

6 Press ENTER.

The TIMER REC indicator on the front of the video TV lights up and the video TV enters timer recording standby mode.

To stop timer recording

Press ON/OFF.

If you make a mistake entering the G-CODE number

Press ← and re-enter the correct number.

To use the video TV before timer recording starts

See page 31.

To check/add/change/cancel the timer settings

See page 32.

continued

Recording TV programs using the timer

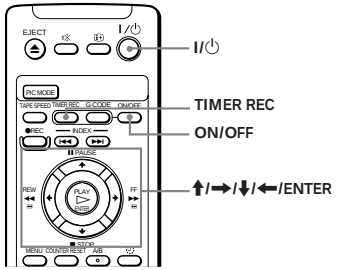
You can preset up to five programs within a one-month period using both the G-CODE setting and the timer setting.

Before you begin

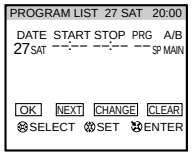
- When the TV is in standby mode (the ⏻ indicator on the video TV is lit in red), press I/⏻, PROGR +/– or a number button on the remote control.
- Make sure that the clock is set correctly. If it is not, see "Setting the clock" on page 9.
- Make sure that the loaded cassette has its safety tab intact.
- Make sure that the video TV does not enter the timer recording standby mode (the Quick Timer indicator on the video TV should not be lit.)

Setting the timer

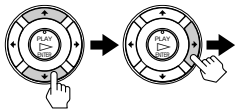
Example: How to record a program broadcast on program position 6 from 21:00 to 22:00 on Sunday, 28th November 1999.

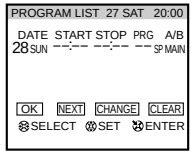


1 Press TIMER REC.



2 Press ↑ or ↓ to set the date , then press →.



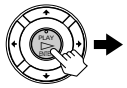


3 Set the recording start time, recording stop time, program position/input (1 or 2), tape speed and sound mode in the same way as in step **2**.

4 Press ENTER.

The cursor appears at OK.

For daily and weekly recording, see "Daily/weekly recording" below.



5 Press ← or → to move the cursor to NEXT for other programs, then press ENTER. Repeat steps **2** through **4**.

6 Press ← or → to move the cursor to OK after setting your desired programs, then press ENTER.

The TIMER REC indicator lights up and the video TV enters timer recording standby mode.

If you have made a mistake during timer setting

Press ← to go back to the previous position and correct the setting.

Daily/weekly recording

You can preset your video TV to record the same program every day of the week (daily recording) or the same program on the same day every week (weekly recording). Press ↓ in step **2** until the desired setting appears in the "DATE" position. With each press, the setting changes as follows:

27 (today) → MON–SUN → MON–SAT → MON–FRI → EVERY SAT → EVERY FRI → ... → EVERY SUN → 26 (next month) .....

To stop timer recording

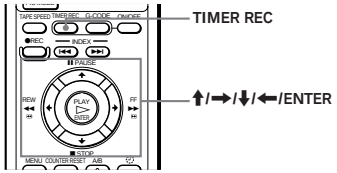
Press ON/OFF.

Using the video TV before timer recording starts

Press ON/OFF to turn off the TIMER REC indicator on the front of the video TV.
Remember to press ON/OFF again to make the TIMER REC indicator light up after setting the recording time.

continued

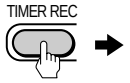
Checking/adding/changing/canceling the timer or G-CODE settings

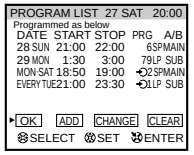


1 Press TIMER REC.

To exit the PROGRAM LIST after checking the settings, skip steps **2** and **3**.

To add, change or clear the settings, follow steps **2** through **4**.





2 Press ← or → to move the cursor to ADD, CHANGE or CLEAR, then press ENTER.

3 To add new settings

Follow steps **2** through **4** of "Setting the timer" on page 30.

To change the settings

Press ↑ or ↓ to move the cursor to the setting you want to change, then press ENTER.
Follow steps **2** through **4** of "Setting the timer" on page 30.

To clear the settings

Press ↑ or ↓ to move the cursor to the setting you want to clear, then press ENTER.
The setting is cleared and "--" appears.

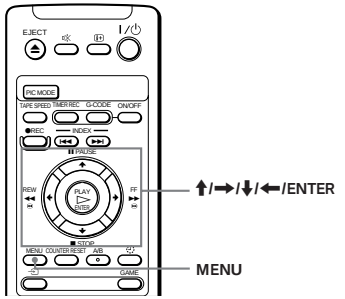
4 Press ← or → to move the cursor to OK, then press ENTER.

If there are other timer settings on the list, the video TV enters the timer recording standby mode and the TIMER REC indicator lights up. The PROGRAM LIST disappears.

When the timer settings overlap

The second program starts recording only after the first program has finished.

Adjusting the TV



Adjusting the volume — INTELLIGENT VOL

Some programs are broadcast at different volume levels. By setting this function to ON, the volume level is stabilized and sudden changes in volume can be prevented.

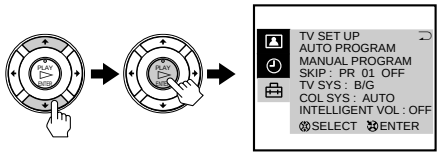
1 Press MENU.

2 Press ↑ or ↓ to select 🧰, then press ENTER.

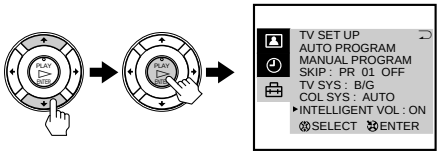
3 Make sure TV SET UP is selected, then press ENTER.

4 Press ↑ or ↓ to select INTELLIGENT VOL , then press ENTER.

The selected item turns red.



5 Press ↑ or ↓ to select ON, then press ENTER.



To return to the normal screen

Press MENU.

continued

Presetting channels manually

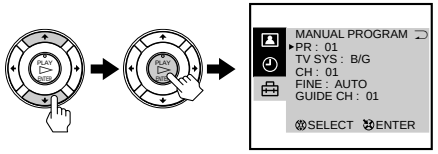
Preset the channels manually if you want to select channels that were not set automatically or if you want to allocate program numbers to channels one by one.

1 Press MENU.

2 Press ↑ or ↓ to select 🧰, then press ENTER.

3 Make sure TV SET UP is selected, then press ENTER.

4 Press ↑ or ↓ to select MANUAL PROGRAM, then press ENTER.



5 Select the program number to which you want to assign a channel number.

(1) Make sure PR is selected, then press ENTER.

(2) Press ↑ or ↓ until the program number you want to preset appears on the menu, then press ENTER.

You can also select the program number with the PROGR +/– or number buttons.

6 Select the desired channel.

(1) Press ↑ or ↓ to select CH, then press ENTER.

(2) Press ↑ or ↓ until the desired channel number appears on the menu, then press ENTER.

You can also select the channel number directly with the number buttons.

Press C (once for regular channels, twice for cable channels), the desired number buttons, then ENTER.

7 If the sound of the desired channel is abnormal, select the appropriate TV system.

(1) Press ↑ or ↓ to select TV SYS, then press ENTER.

(2) Press ↑ or ↓ until the sound becomes normal, then press ENTER.

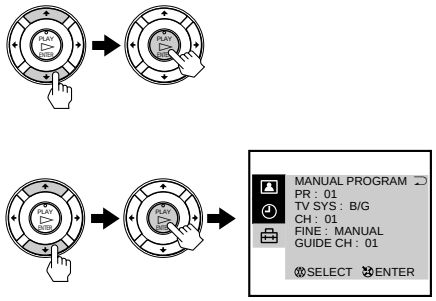
8 If you are not satisfied with the picture and sound quality, you may be able to improve them by using the FINE tuning feature.

(1) Press ↑ or ↓ to select FINE, then press ENTER. The selected item turns red.

(2) Press ↑ or ↓ to select MANUAL, then press ENTER.

(3) Press ↑ or ↓ until the picture and sound quality are optimal, then press ENTER.

FINE tuning can be set between –15 and +15.



9 If the program position is not matched with its correct G-CODE guide channel, set the guide channel.

For a listing of the guide channel numbers, look in a program guide for your area that features G-CODE numbers.

(1) Press ↑ or ↓ to select GUIDE CH, then press ENTER.

(2) Press ↑ or ↓ until the appropriate guide channel appears, then press ENTER.

To return to the normal screen

Press MENU.

continued

Skipping program positions

You can skip unused program positions when selecting a program with the PROGR +/– buttons. However, the skipped programs may still be called up when you select them with the number buttons.

1 Press MENU.

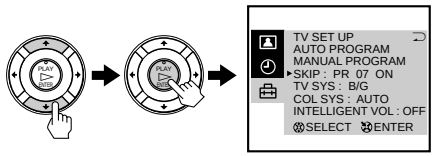
2 Press ↑ or ↓ to select 🖴, then press ENTER.

3 Make sure TV SET UP is selected, then press ENTER.

4 Press ↑ or ↓ to select SKIP, then press ENTER.

5 Press ↑ or ↓ until the program position which you want to skip appears on the menu, then press ENTER.

6 Press ↑ or ↓ to select ON, then press ENTER.



7 Press ENTER and repeat steps **5** and **6** to skip other program positions.

To return to the normal screen

Press MENU.

Adjusting the TV system

If the sound of some channels is abnormal, select the appropriate TV system for your area.

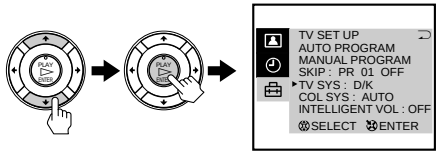
1 Press MENU.

2 Press ↑ or ↓ to select 🖴, then press ENTER.

3 Make sure TV SET UP is selected, then press ENTER.

4 Press ↑ or ↓ to select TV SYS, then press ENTER.

5 Press ↑ or ↓ until the appropriate TV system appears on the menu, then press ENTER.



To return to the normal screen

Press MENU.

continued

Adjusting the color system

Normally set the color system to AUTO. However, when the picture has no color, manually select the appropriate color system for your area.

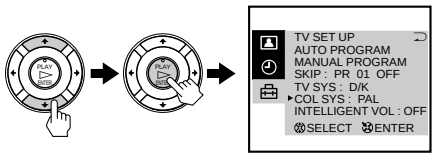
1 Press MENU.

2 Press ↑ or ↓ to select 🧰, then press ENTER.

3 Make sure TV SET UP is selected, then press ENTER.

4 Press ↑ or ↓ to select COL SYS, then press ENTER.

5 Press ↑ or ↓ until the appropriate color system appears, then press ENTER.



To return to the normal screen

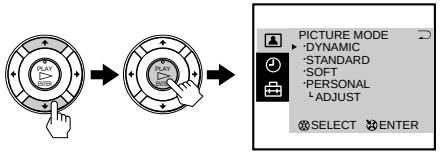
Press MENU.

Changing the PICTURE MODE setting

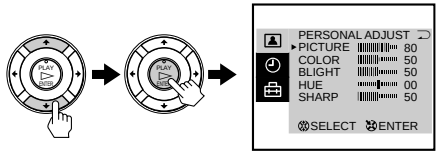
The PICTURE MODE menu allows you to adjust the picture quality.

1 Press MENU.

2 Press ↑ or ↓ to select 👤, then press ENTER.



3 Press ↑ or ↓ to select ADJUST , then press ENTER.



4 Press ↑ or ↓ to select the desired item, then press ENTER.

The adjustment bar for the selected item appears at the bottom of the screen.

5 Adjust the value according to the following table, then press ENTER.

For	Press ↓ to	Press ↑ to
PICTURE	decrease picture contrast	increase picture contrast
COLOR	decrease color intensity	increase color intensity
BRIGHT	darken the picture	brighten the picture
HUE*	increase red picture tones	increase green picture tones
SHARP	soften the picture	sharpen the picture

*You can adjust HUE for the NTSC color system only.

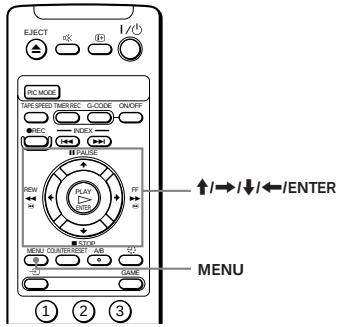
To return to the normal screen

Press MENU.

continued

Adjusting the alignment of the picture

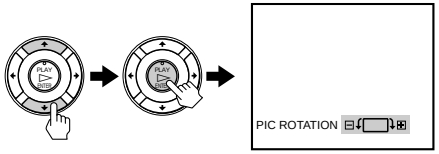
The picture may be out of alignment due to influence from the earth's magnetic field in relation to the position of the TV. You can adjust the angle of the picture if it is not aligned to the TV screen.



1 Press MENU.

2 Press ↑ or ↓ to select 🖶, then press ENTER.

3 Press ↑ or ↓ to select PIC ROTATION, then press ENTER.



4 Press ↑ or ↓ to align the picture's position, then press ENTER.

Tape options

Adjusting the tracking

Adjusting the tracking automatically

The tracking condition is automatically adjusted when this function is set to AUTO.

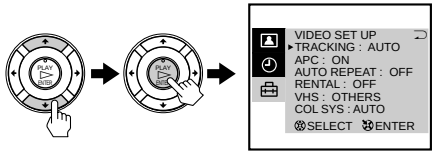
Adjusting the tracking manually

If streaks or snow noise appear during normal playback, adjust the tracking.

1 Press MENU in playback mode.

2 Press ↑ or ↓ to select 🖶, then press ENTER.

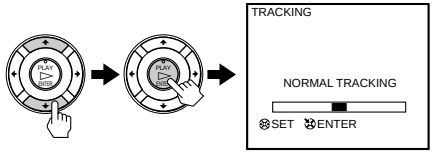
3 Press ↑ or ↓ to select VIDEO SET UP, then press ENTER.



4 Make sure TRACKING is selected, then press ENTER.

5 Press ↑ or ↓ to select MANUAL, then press ENTER.

The tracking meter appears on the screen.



6 Press ← or → to reduce picture noise, then press ENTER.

To return to the normal screen

Press MENU.

continued

Tape options (continued)

Adjusting with Adaptive Picture Control (APC)

This function allows you to improve playback and recording quality automatically according to the condition of the video tape.
This function is set to ON at the factory. To maintain better picture quality, it is advisable to leave the function on. The APC function works on all types of tapes, even on rental tapes.

To change the setting

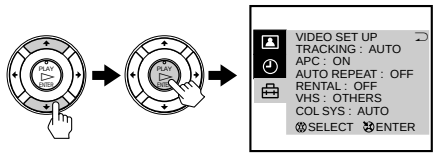
1 Press MENU.

2 Press ↑ or ↓ to select 🧰, then press ENTER.

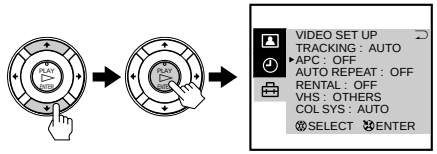
3 Press ↑ or ↓ to select VIDEO SET UP, then press ENTER.

4 Press ↑ or ↓ to select APC, then press ENTER.

The selected item turns red.



5 Press ↑ or ↓ to select OFF, then press ENTER.



To return to the normal screen

Press MENU.

Playing a tape repeatedly

You can play the recorded portion of a tape repeatedly.

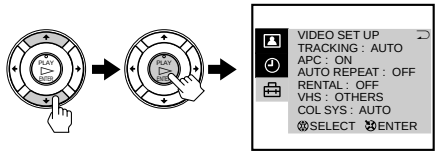
1 Press MENU.

2 Press ↑ or ↓ to select 🧰, then press ENTER.

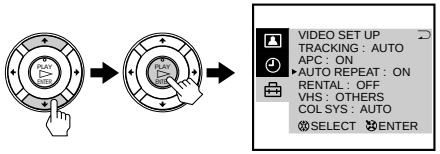
3 Press ↑ or ↓ to select VIDEO SET UP, then press ENTER.

4 Press ↑ or ↓ to select AUTO REPEAT, then press ENTER.

The selected item turns red.



5 Press ↑ or ↓ to select ON, then press ENTER.



6 Press MENU to return to the normal screen.

7 Press PLAY ►.

Playback starts. When the tape reaches its end, the video TV rewinds the tape to the beginning, then plays it again.

continued

Tape options (continued)

Adjusting the picture for rental tapes

If you are not satisfied with the picture quality while playing a tape, even when APC is on, set RENTAL to ON. It is recommended to use this function when watching rental tapes.

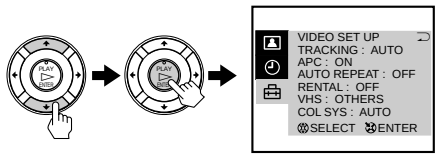
1 Press MENU.

2 Press ↑ or ↓ to select 🖷, then press ENTER.

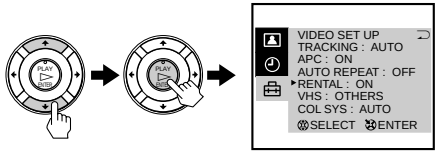
3 Press ↑ or ↓ to select VIDEO SET UP, then press ENTER.

4 Press ↑ or ↓ to select RENTAL, then press ENTER.

The selected item turns red.



5 Press ↑ or ↓ to select ON, then press ENTER.



To return to the normal screen

Press MENU.

When connecting to a Sony VCR

If you use this video TV with another Sony VCR, the remote control may accidentally operate both the video TV and VCR at the same time. To prevent this from happening, set VHS to SONY so that the remote control operates only this video TV.

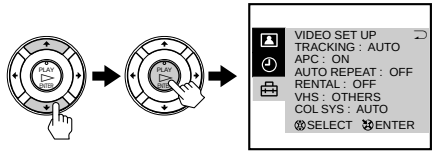
1 Press MENU.

2 Press ↑ or ↓ to select 🖷, then press ENTER.

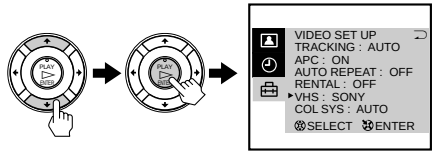
3 Press ↑ or ↓ to select VIDEO SET UP, then press ENTER.

4 Press ↑ or ↓ to select VHS, then press ENTER.

The selected item turns red.



5 Press ↑ or ↓ to select SONY, then press ENTER.



To return to the normal screen

Press MENU.

continued

Tape options (continued)

Setting the color system

Normally set COL SYS in the menu to AUTO. If streaks appear during playback, set COL SYS to correspond to the system that the tape was recorded in.

1 Press MENU.

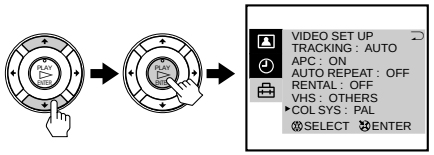
2 Press ↑ or ↓ to select 🖶, then press ENTER.

3 Press ↑ or ↓ to select VIDEO SET UP, then press ENTER.

4 Press ↑ or ↓ to select COL SYS, then press ENTER.

5 Press ↑ or ↓ until the corresponding color system appears, then press ENTER.

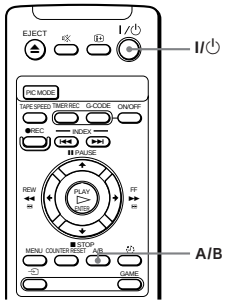
Select the same color system that the tape was recorded in.



To return to the normal screen

Press MENU.

Selecting a bilingual program



You can listen to the sub-channel of NICAM bilingual I system programs.

Press A/B repeatedly until you receive the sound mode you want.

The on-screen display changes to show the selected sound mode and the ⏻ indicator on the video TV lights up in red.

Broadcasting	On-screen display (Selected sound)
NICAM bilingual I	MAIN (Main sound) → SUB (Sub sound) → MONO (Regular sound) →

Notes

- Bilingual broadcasts can be received only in the NICAM bilingual I television system.
- Only the selected sound can be recorded.

If the sound is distorted or noisy when receiving a monaural program through the ⅂ (antenna) terminal

Press A/B repeatedly until "MONO" appears on the screen. To cancel the monaural sound setting, press A/B again until "AUTO" appears on the screen.

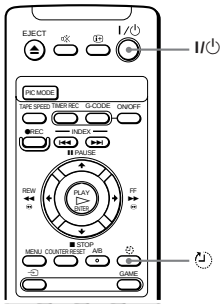
MONO → AUTO →

Note

- The "MONO" or "AUTO" setting is memorized for each program position.

Switching off automatically —SLEEP

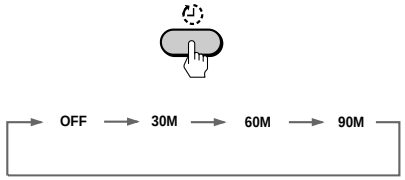
You can automatically switch the video TV into standby mode after a selected time period.



Press ⏲.

With each press, the time period (in minutes) changes as illustrated.

One minute before the TV switches into standby mode, the message "SLEEP TIMER: 1M" is displayed on the screen.

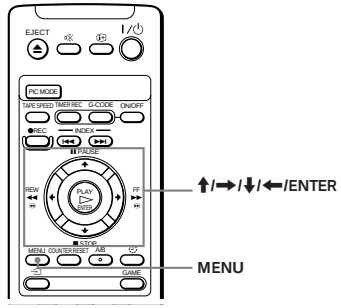


To cancel the timer

Press ⏲ to select OFF or press I/⏻ to turn on the power.

Switching on automatically — ON TIMER

You can preset your video TV to automatically switch on at a desired time. You can select the TV program, video playback or input source to be switched on.



1 Press MENU.

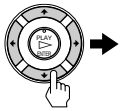
2 Press ↑ or ↓ to select ⏲, then press ENTER.

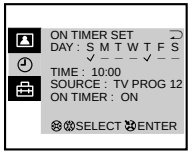
3 Make sure ON TIMER SET is selected, then press ENTER.

4 Make sure that the cursor appears at DAY, then press ENTER.

The selected item turns red.

5 Press ↑, ↓, ← or → to set the timer on (✓) or off (–) for each day of the week.





6 Press ↑ or ↓ to select TIME, then press ENTER.

7 Press ↑ or ↓ to set the on-time hour and minute, then press ENTER.

8 Press ↑ or ↓ to select SOURCE, then press ENTER.

continued

9 Press ↑ or ↓ to set the source to be switched on, then press ENTER.

The SOURCE changes as follows.

TV PROG → VCR ► (video playback)

If you select TV PROG, press ↑ or ↓ to change the channel numbers. Then press ENTER again.

10 Press ↑ or ↓ to select ON TIMER, then press ENTER.

11 Press ↑ or ↓ to set ON TIMER to ON, then press ENTER.

12 Press MENU to return to the normal screen.

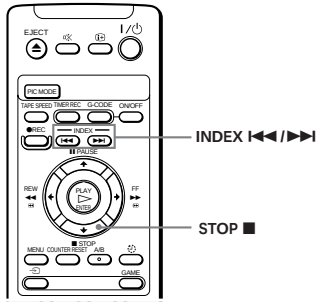
The ⏲ indicator on the video TV lights up.

To cancel the on-timer function

In step **11**, press ↑ or ↓ to set ON TIMER to OFF, then press ENTER.
The ⏲ indicator on the video TV turns off.

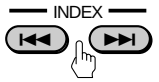
Searching using the index function

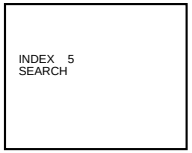
The video TV marks the tape with an index signal at the point where each recording begins. Use these signals as references to find a specific recording. This video TV can search up to 99 index signals ahead of or behind the current position.



1 Insert an indexed tape.

2 Press INDEX ⏮/⏭ repeatedly to specify how many index signals ahead or behind you want to search.





To search ahead, press INDEX ⏭.

To search backwards, press INDEX ⏮.

The video TV starts searching and the index number on the TV screen counts down to zero. Playback starts automatically from that point.

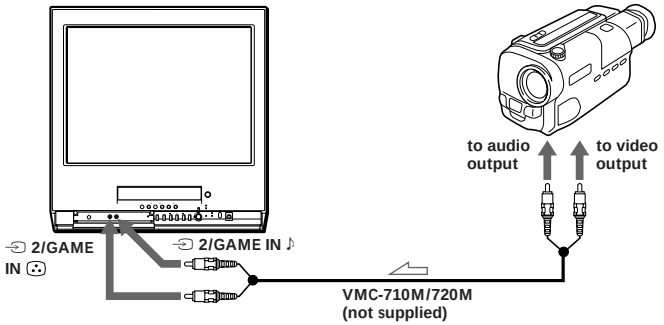
To stop searching

Press STOP ■.

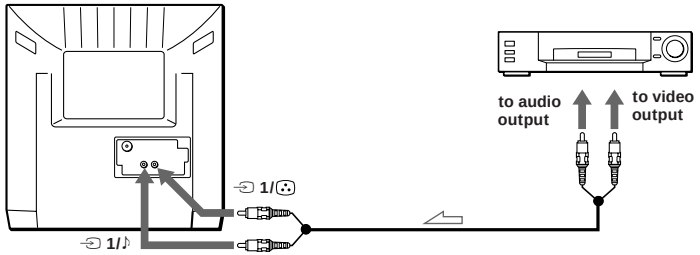
Connecting optional equipment

Watching and recording the picture input from optional equipment

To connect a video camera

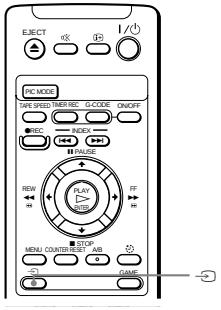


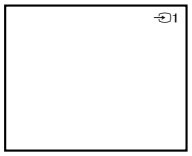
To connect a VCR



To watch the video input signal

Press ⇦ so that ⇦1 or ⇦2 appears on the screen.

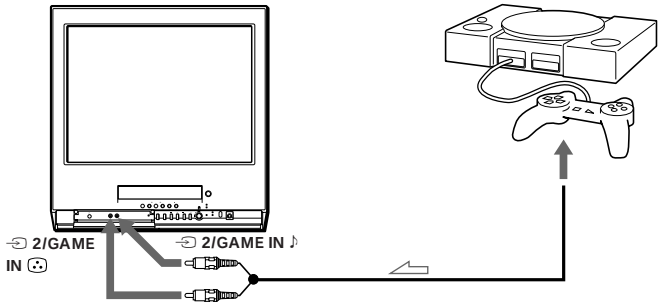




– 59 –

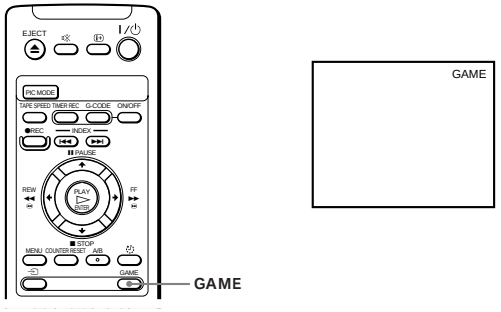
continued

To connect a video game



To display the video game screen

Press GAME when the video TV is in standby mode.



To switch to a TV program

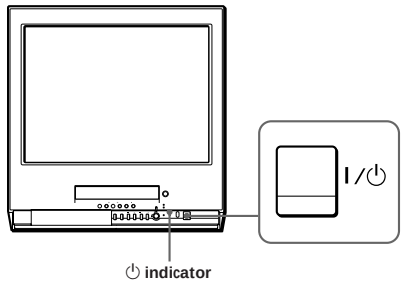
Press the number button on the remote control, PROGR +/– or ⮊ on the video TV or remote control.

To switch to the VCR

Press the PLAY ► button on the video TV or remote control when a cassette is in the video TV.

Self-diagnosis function

Your video TV is equipped with a self-diagnosis function. If there is a problem with your video TV, the ⏻ indicator flashes in red. The number of times the indicator flashes indicates the possible causes.



1 Check that the ⏻ indicator flashes red once or more in intervals of 3 seconds.

2 Count the number of times the indicator flashes.

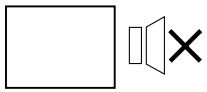
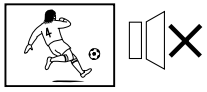
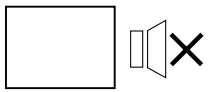
3 Press I/⏻ to turn off your video TV.

4 Inform your nearest Sony service facility about the number of times the indicator flashes.

Be sure to note the model name and serial number located on the rear of your video TV.

Troubleshooting

If you have any problems while viewing your video TV, please check the following troubleshooting guide. If the problem persists, contact your Sony dealer.

Symptom	Possible cause	Solutions
TV section		
No picture/No sound 	The power cord or antenna is not connected.	Check the AC power cord and the antenna connections.
	The video TV is not turned on.	Press I/⏻ on the video TV. If the standby indicator (⏻) is lit in red, press I/⏻ or a program number button on the remote control.
Good picture/No sound 	The volume level is too low.	Press + to increase the volume level.
	The sound is muted.	Press to cancel the muting.
	Headphones are connected to (headphones) jack.	Disconnect the headphones.
No color or poor color 	The color level setting is too low.	Adjust PICTURE, COLOR and BRIGHT in the PERSONAL ADJUST menu. (page 39)
	The picture setting is inappropriate.	Press PIC MODE to switch the picture setting. (page 15)
	The color system setting is inappropriate.	Display the TV SET UP menu and check the color system (COL SYS) setting. (page 38)
	The antenna direction, position and angle need adjustment.	Adjust the antenna direction, position and angle. Contact a Sony dealer for advice.
Double images or "ghosts" 	Broadcast signals are reflected by nearby mountains or buildings.	Use a highly directional antenna.
	The antenna direction, position and angle need adjustment.	Adjust the antenna direction, position and angle. Contact a Sony dealer for advice.
No picture/No sound from video input sources 	The connecting cord between the video TV and the input sources is disconnected.	Check the connection between the video TV and the input sources.
	Input is not selected correctly.	Press so that "1" or "2" appears. (page 53)

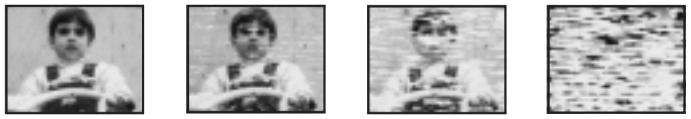
Symptom	Possible cause	Solutions
Good picture/Abnormal sound 	The TV system setting is inappropriate.	• If the sound of all the channels is abnormal, display the TV SET UP menu and select the appropriate TV system (TV SYS), then preset the channels again. (pages 11 and 12) • If the sound of some channels is abnormal, display the MANUAL PROGRAM menu in the TV SET UP menu and select the appropriate TV system (TV SYS) (page 34).
Snowy picture/Abnormal sound 	The connection is loose or the cable is damaged.	Check the antenna cable and connection on the video TV and at the wall.
	The channel presetting is inappropriate or incomplete.	Display the TV SET UP menu and select MANUAL PROGRAM to manually preset the channel again.
	The antenna type is inappropriate.	Check the antenna type (VHF/UHF). Contact a Sony dealer for advice.
	The antenna direction, position and angle need adjustment.	Adjust the antenna direction, position and angle. Contact a Sony dealer for advice.
Dotted lines or stripes 	There is local interference from cars, neon signs, hair dryers, power generators, etc.	• Do not use a hair dryer or other equipment near the video TV. • Adjust the antenna direction, position and angle for minimum interference. Contact a Sony dealer for advice.
Abnormal color patches 	There is magnetic disturbance from external speakers or other equipment.	Locate external speakers or other equipment away from the video TV. Press I/⏻ on the video TV to turn off the video TV for about five minutes, then turn on again.
Clock and timer section		
The clock has stopped and "--:--" is displayed.	The power has been interrupted or the AC power cord is disconnected.	Re-set the clock and timer settings. (page 9)

continued

Symptom	Possible cause	Solutions
Playback section		
Power is on, but the tape does not run.	The safety device has been activated.	Switch off, disconnect the AC power cord, and leave the set for about one minute.
Poor playback picture 	The color system setting is inappropriate.	Display VIDEO SET UP and set the color system (COL SYS) to the setting corresponding to the color system that the tape is recorded in. (page 46)
	The tracking condition is inappropriate.	Adjust the tracking manually. (page 41)
	The video heads are dirty.	Clean the video heads using the Sony T-25CLD, T-25CLDR, or T-25CLW video head cleaning cassette (not supplied). If these cleaning cassettes are not available in your area, have the heads cleaned at your nearest Sony service facility (a standard service fee will be charged). Do not use any commercially available liquid type cleaning cassettes other than Sony's, as it may damage the video heads.
	The video heads may be worn out.	The video heads may have to be replaced. Contact a Sony dealer for advice.
	The tape is worn out.	Use a new tape.
The sound drops out.	The tape is defective.	Use a new tape.

Symptoms caused by contaminated video heads

• Normal picture **• Rough picture** **•Unclear picture** **• No picture (or black & white screen appears)**



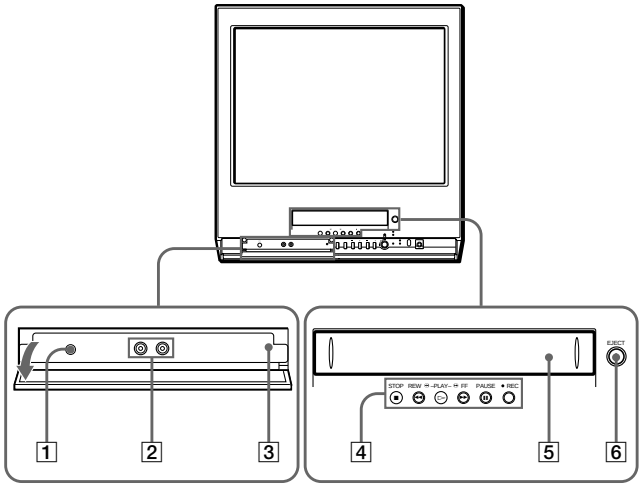
initial contamination → **terminal**

Symptom	Possible cause	Solutions
Recording section		
The cassette is ejected when you press REC ●.	The safety tab of the cassette has been removed.	Cover the safety tab hole with adhesive tape, or use another cassette with its safety tab intact.
Cannot record.	No cassette has been inserted.	Insert a cassette with its safety tab intact.
	The tape is at its end.	Rewind the tape.
Timer recording section		
Cannot program a recording using the timer.	The clock has not been set.	Set the current time and date. (page 9)
The cassette is ejected when you press ON/OFF.	The safety tab of the cassette has been removed.	Cover the tab hole with adhesive tape, or use another cassette with its safety tab in place.
The TIMER REC indicator does not light up even though you press ON/OFF.	No cassette has been inserted.	Insert a cassette with its safety tab intact.
	The tape is at its end.	Rewind the tape.
	No setting is made for timer recording.	Set the program for timer recording. (pages 30 through 31)
Timer recording was not made.	• You did not press ON/OFF. • There has been a power interruption.	—
Others		
A cassette cannot be inserted.	Another cassette is already inserted.	Press EJECT ⏏ to eject the cassette.
The remote control does not work.	The batteries are low.	Replace the batteries. (page 4)
	The batteries are installed incorrectly.	Install the batteries with correct polarities. (page 4)
TV cabinet creaks.	Changes in room temperature sometimes make the TV cabinet expand or contract, causing a noise. This does not indicate a malfunction.	—
A small "boom" sound is heard when the video TV is turned on.	The video TV's demagnetizing function is working. This does not indicate a malfunction.	—

Identifying parts and controls

Refer to the pages indicated in parentheses ( ) for details.

Front panel



1 ∩ (headphones) jack

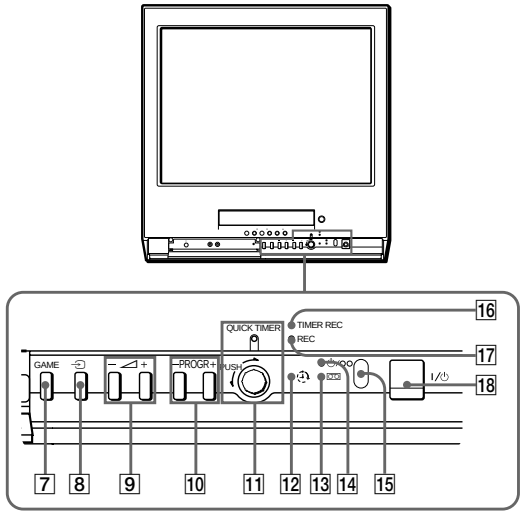
2 2/GAME IN jacks (video)/♪ (audio)) (52, 53)

3 TUNER PRESET ON/OFF button (12, 13)

4 Tape transport buttons
STOP ■ button (17, 20)
REW ◀◀/⏮ button (17)
PLAY ▶ button (17)
FF ▶▶/⏭ button (17)
PAUSE ❚❚ button (17, 20)
REC ● button (20)

5 Cassette compartment

6 EJECT ⏏ button (17)



7 GAME button (13, 54)

8 (input select) button (53)

9 (volume) +/– buttons (15)

10 PROGR +/– buttons (14)

11 QUICK TIMER (22, 23)
Indicator
Rotary button

12 (ON TIMER) indicator (49)

13 (VCR) indicator (20)

14 ⏻/○○ (standby/bilingual) indicator (14)

15 Remote control sensor

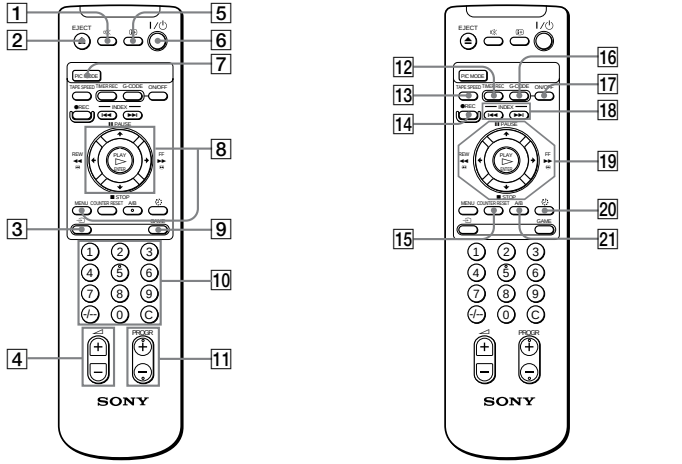
16 TIMER REC (recording) indicator (31)

17 REC (recording) indicator (20)

18 I/⏻ (power/standby) switch (14)

continued

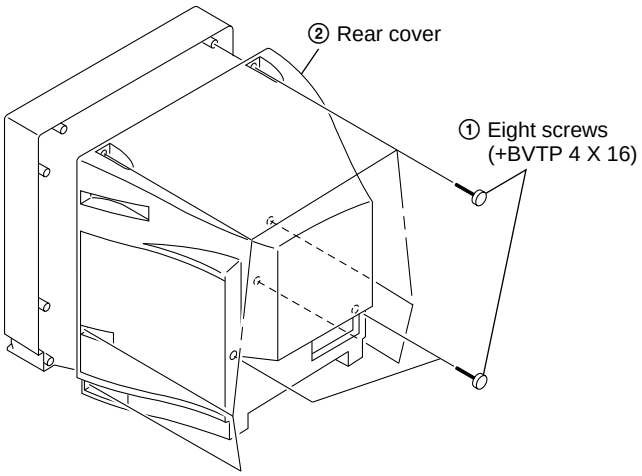
Remote control



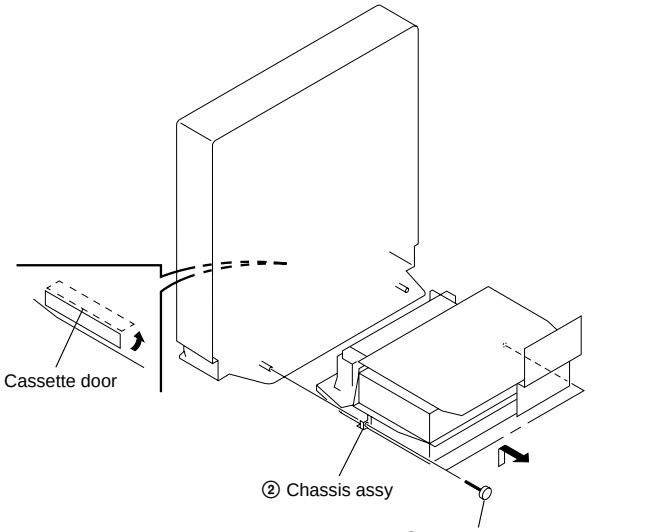
1 (muting) button (15)
2 EJECT ⏏ button (17)
3 (input select) button (53)
4 (volume) +/– buttons (15)
5 (display) button (16, 18)
6 I/⏻ (power/standby) button (14)
7 PIC MODE (picture mode) button (15)
8 Menu operation buttons (26)
MENU button
↑/←/↓/→ buttons
ENTER button
9 GAME button (54)
10 Number buttons (19)
11 PROGR +/– buttons (19)
12 TIMER REC (recording) button (30)
13 TAPE SPEED button (19)
14 REC ● (recording) button (20)
15 COUNTER RESET button (18)
16 G-CODE button (26)
17 ON/OFF button (for timer recording) (31)
18 INDEX ⏮/⏭ button (51)
19 Tape transport buttons
PAUSE ❚❚ button (17, 20)
REW ◀◀/⏪ button (17)
STOP ■ button (17, 20)
FF ▶▶/⏩ button (17)
PLAY ▶ button (17)
20 ⏲ (SLEEP TIMER) button (48)
21 A/B (bilingual) button (47)

SECTION 2
DISASSEMBLY

2-1. REAR COVER REMOVAL

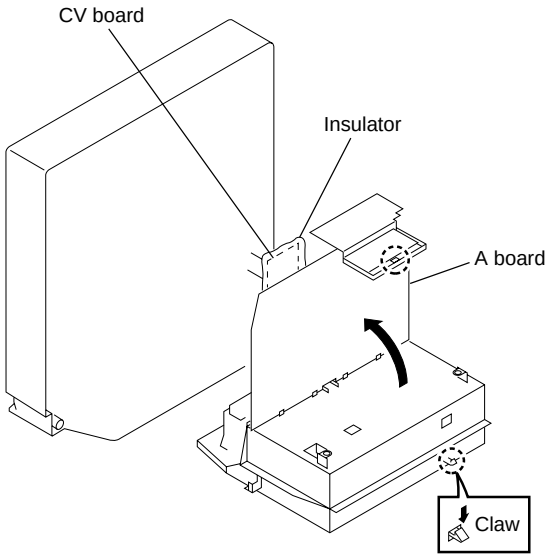


2-2. CHASSIS ASSY REMOVAL

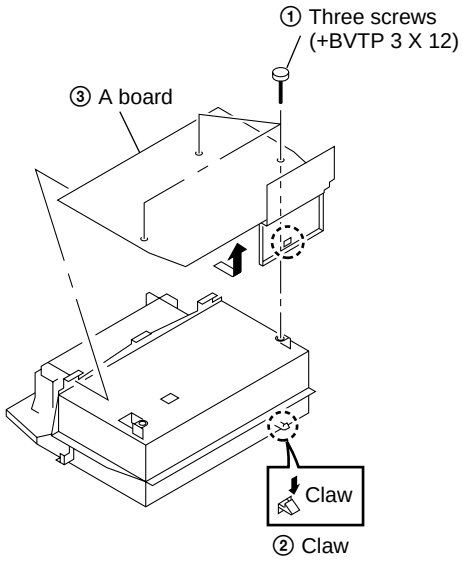


Note: Notice for Installing chassis assmbly
Install chassis assembly when keep
the cassette door open state.

2-3. SERVICE POSITION (A BOARD)

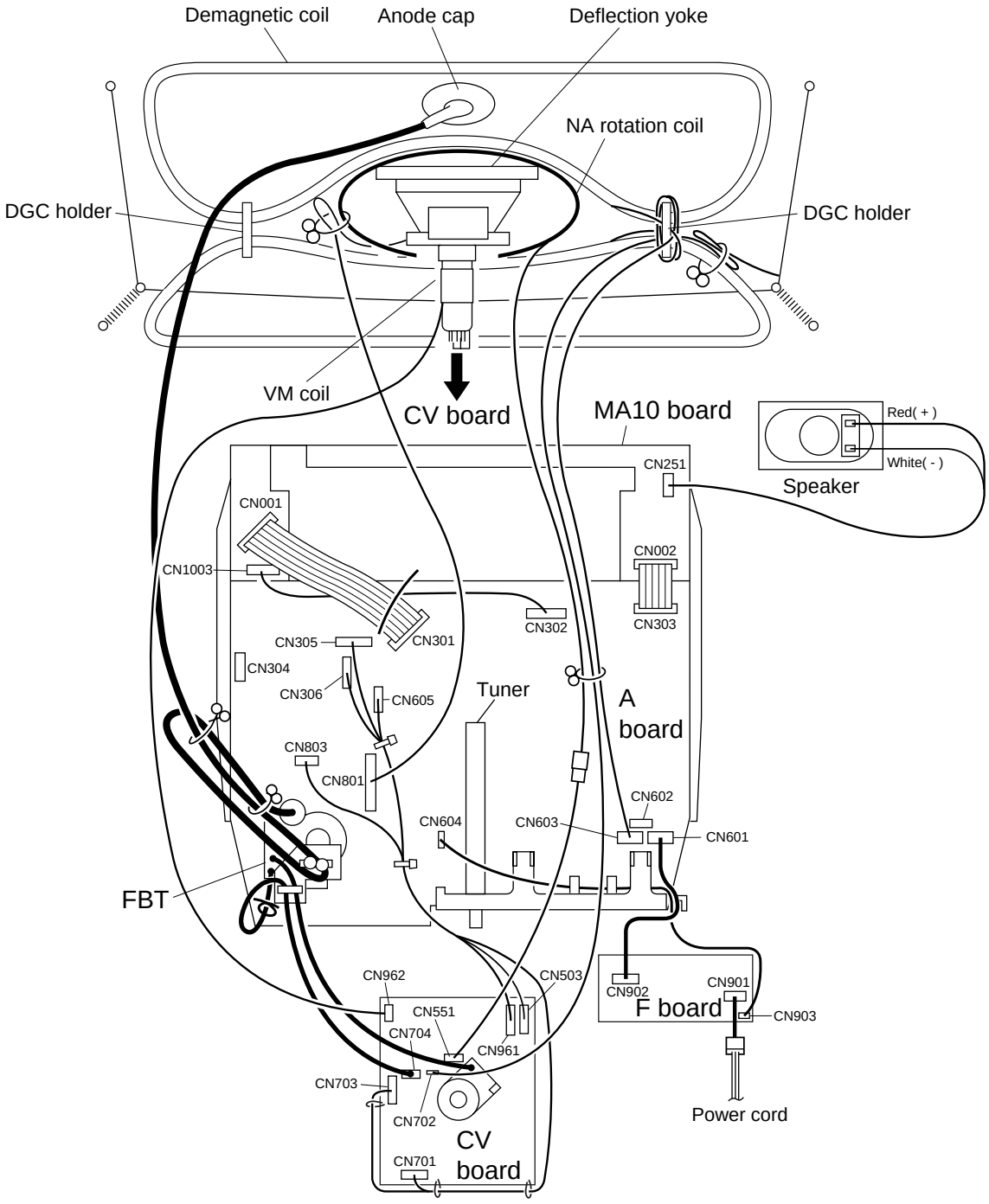


2-4. A BOARD REMOVAL

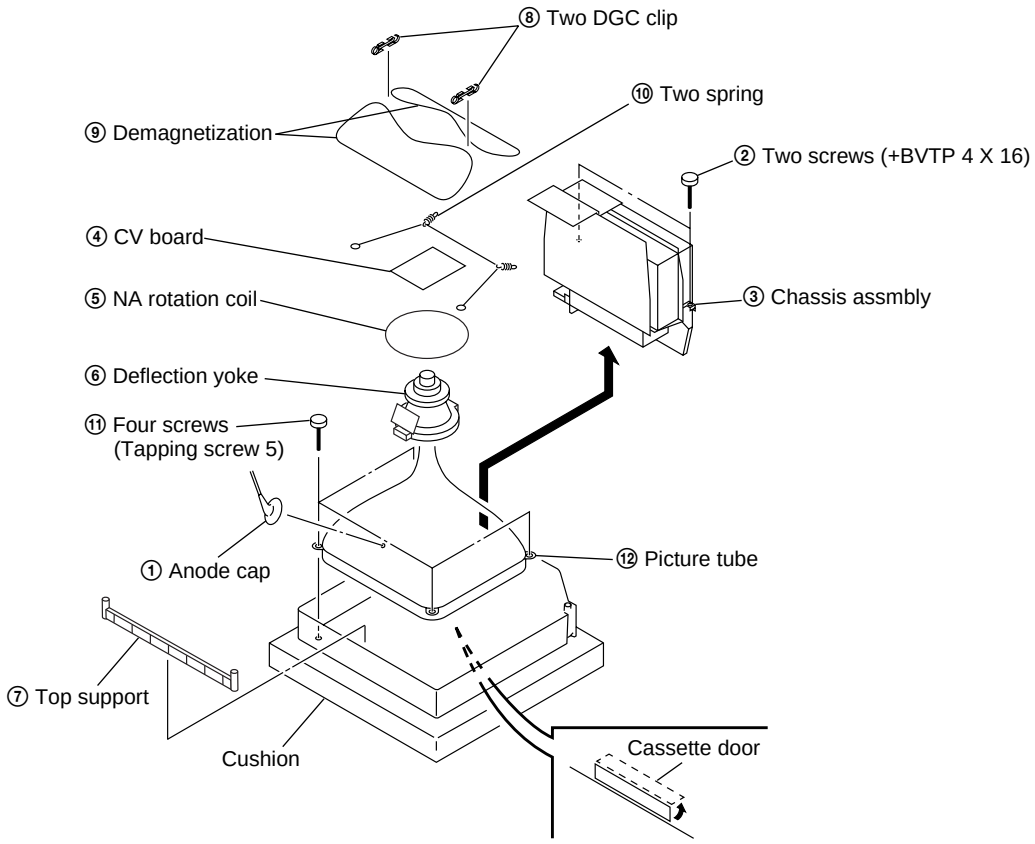


Note: Open the A board after move the claw

2-5. HARNESS LOCATION



2-6. PICTURE TUBE REMOVAL



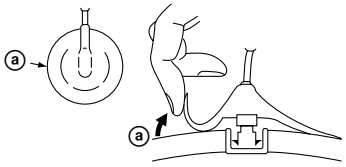
Note: Notice for Installing chassis assmbly
Install chassis assembly when keep
the cassette door open state.

- **Removal of anode-cap**

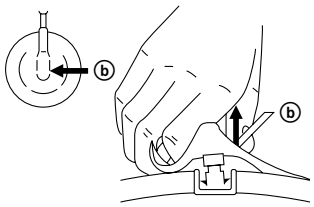
NOTE : Short circuit the anode of the picture tube and the anode cap to the metal chassis, CRT shield or carbon paint on the CRT, after removing the anode.

- **removing procedures**

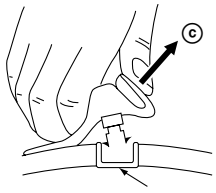
① Turn up one side of the rubber cap in the direction indicated by the arrow ⓐ.



② Using a thumb pull up the rubber cap firmly in the direction indicated by the arrow ⓑ.

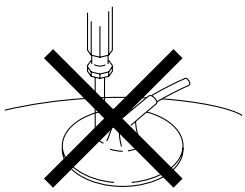


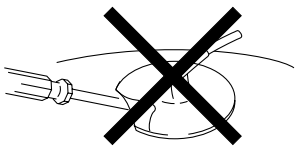
③ When one side of the rubber cap is separated from the anode button, the anode-cap can be removed by turning up the rubber cap and pulling it up in the direction of the arrow ⓒ.



- **how to handle an anode-cap**

① Don't hurt the surface of anode-caps with shaped objects!
② Don't press the rubber too hard so as not to hurt inside of anode-caps!
A metal fitting called the shatter-hook terminal is built into the rebber.
③ Don't turn the foot of rubber over too hard!
The shatter-hook terminal will stick out of damage the rubber.





SECTION 3
SET-UP ADJUSTMENTS

- The following adjustments should be made when a complete realignment is required or a new picture tube is installed.
- These adjustments should be performed with the rated power supply voltage, unless otherwise noted.

The PICTURE and Brightness controls should be set as follows unless otherwise noted:

PICTURE control ..... standard
BRIGHTNESS control ..... standard

Perform the adjustments in the following order:

1. Beam Landing
2. Convergence
3. Focus
4. Screen (G2)
5. White Balance
6. Picture Distortion

Note: Test Equipment Required.
1. Color bar/Pattern Generator
2. Degausser
3. Oscilloscope

Preparation:

- In order to reduce the influence of external magnetic forces on the picture tube, face the TV set in an easterly or westerly direction.
- Turn the power switch for the unit ON and erase the magnetic force using a degausser.

3-1. BEAM LANDING

1. Receive PAL MONOSCO signal, make [picture] to maximum.
2. Set service mode to VP38 (RON) = "00", VP39 (GON) = "01", VP40 (BON) = "00" and make all green pattern.
3. Shift the DY Assy to full of front side and rotate purity magnet and make green to center. (Fig.3-1 to 3-3)
4. Rotate DY Assy to right and the left and screen align to horizontal.
5. Shift slowly the DY Assy to back side and set raster to get full green. (Fig.3-3)
6. Fix roughly the DY Assy by the stopper.
7. When the landing at the corners is not correct, adjust by using disk magnets. (Fig.3-4)
8. Set service mode to VP38 (RON) = "01", VP39 (GON) = "01", VP40 (BON) = "01".

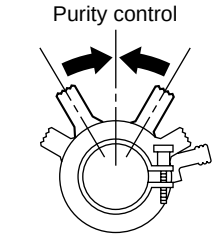


Fig.3-1

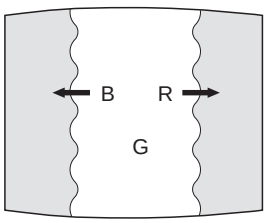


Fig.3-2

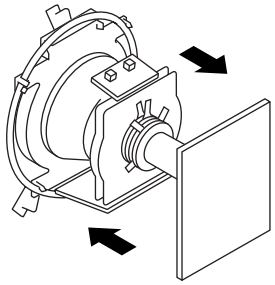


Fig.3-3

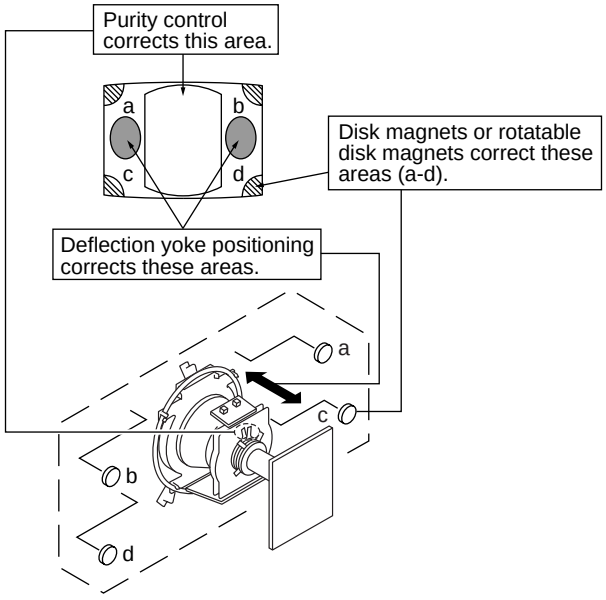
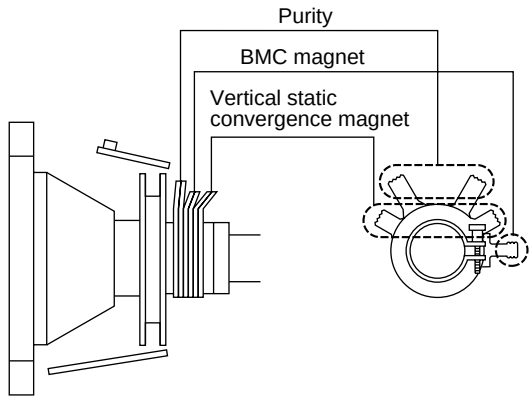


Fig.3-4

3-2. CONVERGENCE



(1) Horizontal and Vertical Static Convergence

1. Receive DOT HATCH signal adjust [BRT], [PIX] to looks easily.
2. Set V. STAT Mg, BMC Mg to standard condition.
3. Correct V. STAT Mg.
   (Correct vertical lag of R, B-DOT around the center of CRT.) (Fig.3-5)
4. Adjust BMC Mg.
   (Make evenly horizontal lag of R, B-DOT toward G-DOT around the center of CRT.)
5. Adjust H. STAT VR. (RV701)
   (Adjust horizontal lag of R, B-DOT around the center of CRT.) (Fig.3-5)
6. Have to tracking adjust V. STAT Mg, BMC Mg because DOT moves influence each other.
   (Correct vertical lag of R.G.B.-DOT.)

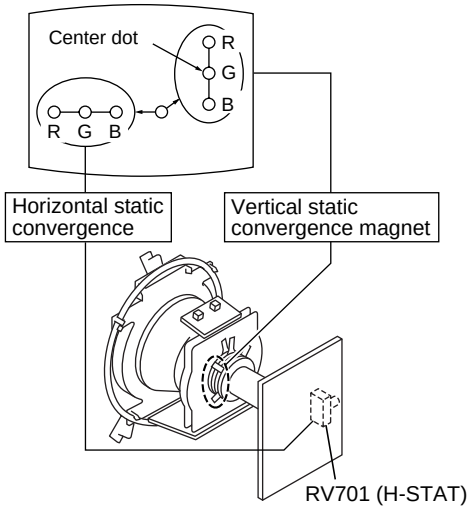
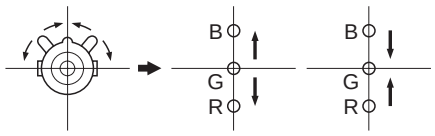


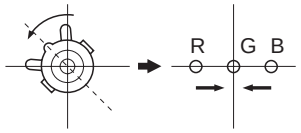
Fig.3-5

- **Movement of red, green and blue dots by V. STAT tilting and opening or closing.**

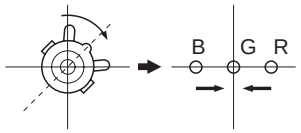
① Movement of opening or closing the V. STAT convergence magnet.



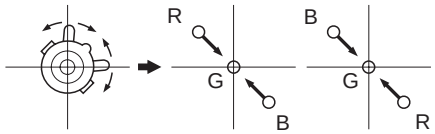
② Movement of tilting the V. STAT convergence magnet counterclockwise.



③ Movement of tilting the V. STAT convergence magnet clockwise.

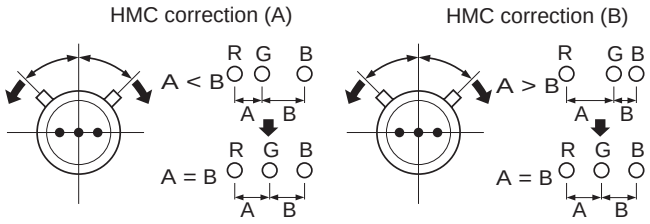


④ Movement of tilting and opening or closing the V. STAT convergence magnet.

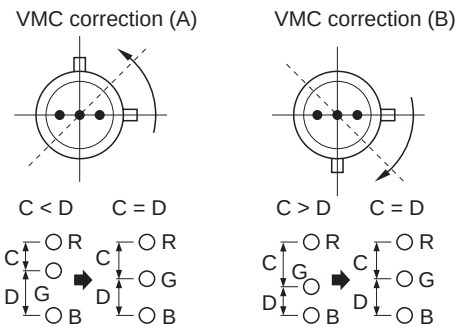


- **If the blue dot did not harmonize with red and green, then use the BMC magnet to adjust.**

1)HMC (Horizontal mis-convergence) correction



2)VMC (Vertical mis-convergence) correction.



- **Adjust TLH. (TLH CORRECTION PIECE : 4-057-714-01)**
  Correct horizontal mis-convergence of X axis' right and left red and blue. When red is outside and view from DY neck side, insert TLH correction piece to rightside (TLH+) and when blue is outside and also view from DY neck side, insert TLH correction piece to left (TLH-).

- **Adjust YCH. (YCH)**
  Adjust the horizontal convergence of red and blue of Y axis' up and down part.
  (Adjust with tracking)

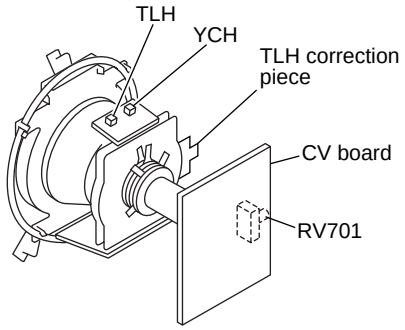


Fig.3-6

(2) Convergence adjustment of screen surroundings.
(Dynamic convergence)

1. Adjust by the deflection yoke (swivel) to screen both sides cross mis-convergence become finest whole screen. (Fig.3-7)
2. Fix the deflection yoke to insert the wedge to the picture tube funnel and the deflection yoke. (Fig.3-8)

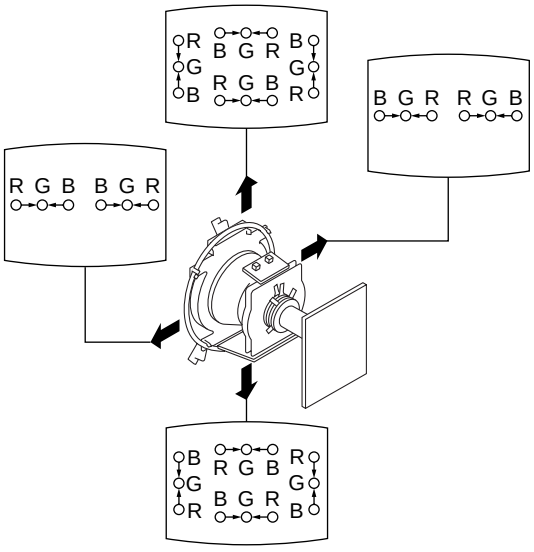


Fig.3-7

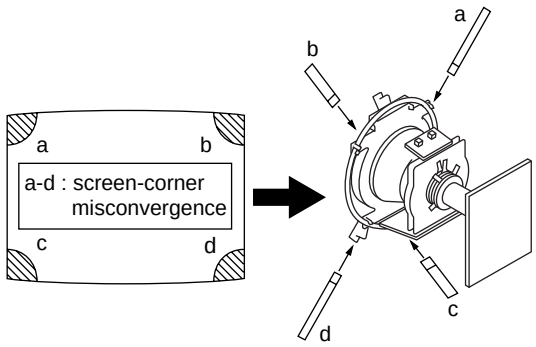


Fig.3-8

3-3. FOCUS ADJUSTMENT

1. Receive PAL MONOSCO signal, with standard condition.
2. Focus adjustment should be balanced whole picture area (not detail), and adjust focus by [FOCUS] VR of FBT. (Fig.3-9)
3. Receive ALL WHITE signal.
4. Magenta ring should be within limit sample. (Fig.3-9)
   <If out of limit>
   Tracking adjust magentaring and the focus by [FOCUS] VR of FBT.

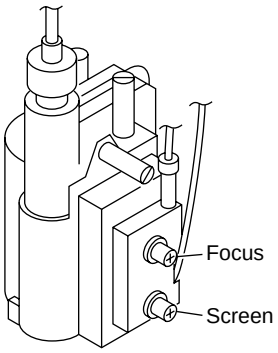


Fig.3-9

3-4. SCREEN (G2) ADJUSTMENT

1. Receive white signal and make standard condition.
2. Set service data to VP38 (RON), VP39 (GON), VP40 (BON) = "00" and take care that the screen become pitch-dark.
3. Add 175 ± 1.0VDC external voltage to cathodes of red, green, blue.
4. Adjust to obtain just before retrace line goes out (The point where the retrace line is going to appears). (Fig.3-9)
5. Set service data to VP38 (RON), VP39 (GON), VP40 (BON) = "01".

3-5. WHITE BALANCE ADJUSTMENT

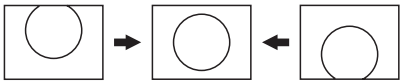
1. Receive color-bar signal and set menu picture quality to minimum picture and standard brightness.
2. Set to service mode and adjust CUT-OFF (VP25-green, VP26-blue) and DRIVE (22-green, VP23-blue) of center.
3. Switch to all white signal.
4. Repeat CUT-OFF adjustment to become finest white balance between minimum picture and maximum picture.
5. Receive PAL MONOSCO signal.
6. Adjust sub-bright (VP29-SBRT) to become gleaming.
7. Subtract 1 step from below adjusted data.

Fig.3-10

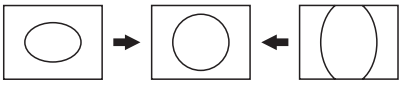
3-6. PICTURE DISTORTION ADJUSTMENT

- When performing these adjustment, do receive monoscope signal.

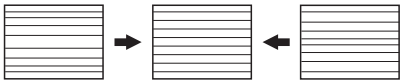
VP1 (VPOS)



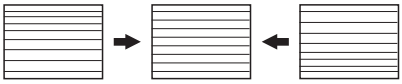
VP2 (VSIZ)



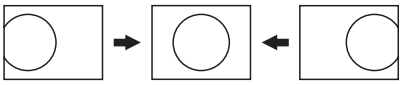
VP3 (SCOR)



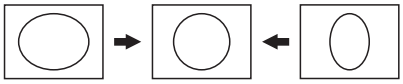
VP4 (VLIN)



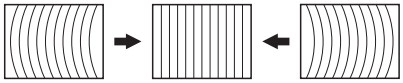
VP5 (HPOS)



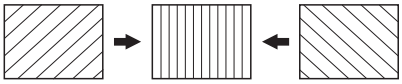
VP6 (HSIZ)



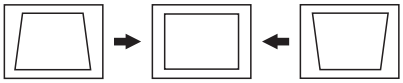
VP7 (AFBW)



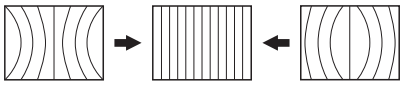
VP8 (AFAG)



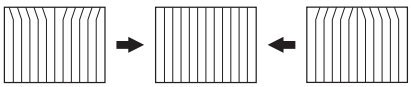
VP9 (TRAP)



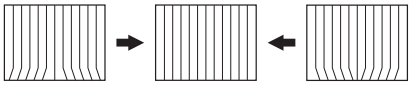
VP10 (PAMP)



VP11 (UCPN)



VP12 (LCPN)



SECTION 4
SAFETY RELATED ADJUSTMENT

CONFIRMATION OF HOLD-DOWN

When the parts with a ⋈, ◪ mark on the circuit diagram shown below are replaced, confirm the matters described in items 1. and 2. shown below.

⋈: PM601, R614, C614, IC607, R638

1. CONFIRMATION OF +B LINE (A BOARD)

1) Input 110 $^{+2}_{-0}$V A C.
2) Receive DOT HATCH signal and adjust PIX, BRT to minimum.
3) Connect the digital multimeter to ⊕ line of C632. (Fig.4-2)
4) Confirm the voltage value of +B line corresponds like below.

Less than 137.5V DC

2. CONFIRMATION OF HOLD-DOWN (A BOARD)

1) Receive monoscope signal and adjust PIX, BRT, VOL to standard.
2) Input the undermentioned voltage to between C632 + side and GND, then check the protector function to works. (Fig.4-1)

Less than 142.5V DC

A BOARD – COMPONENT SIDE –

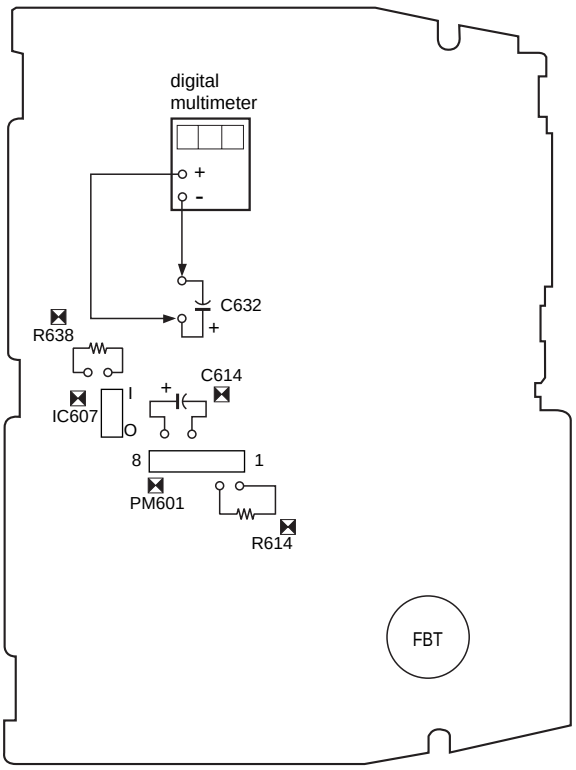


Fig.4-2

3. CONFIRMATION AFTER EXCHANGED IC607 AND R638

Confirm the voltage value of +B line voltage satisfying with standard value when exchanged IC607 and R638.

4. CONFIRMATION AFTER EXCHANGED PM601, R614 AND C614

Confirm the protection circuit satisfying with standard value.

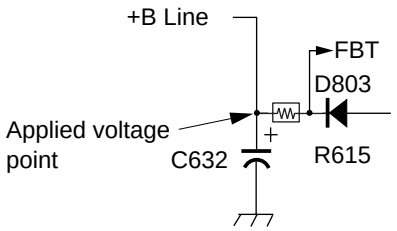


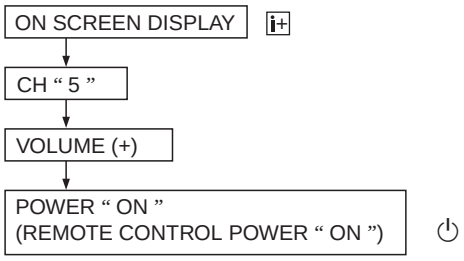
Fig.4-1

SECTION 5
CIRCUIT ADJUSTMENT

5-1. ADJUSTMENTS WITH COMMANDER

1. ENTERING SERVICE MODE

1) Turn on the main power of the set and enter into stand-by mode.
2) Press the following sequence of buttons on the Remote Control Commander.



2. TO READ THE MEMORY

1) Set to service mode.
2) When push these buttons 7 → 0 on the remote commander, it would read all item's adjustment value and switch set-up value which written in the memory.

Note: Do not read before "standard value" writing when exchange the MEMORY IC002.

3. PICTURE ADJUSTMENT

1) Select adjustment item number of service mode by 1 and 4 buttons on the remote commander.
2) Adjust 3 and 6 buttons to satisfy set-up value and picture condition of the screen.

4. WRITE TO THE MEMORY

- After adjusted, write to the MEMORY by MUTE and 0 buttons and push 0 button while green "light" word indicated on the picture display (about 3 seconds). It takes about 1 second to complete the writing to the MEMORY. When red "light" displayed turns to "G" and that makes writing completely finish.

Color of the screen displayed light word.

MUTE button on ..... Green word
0 button on ..... Red word

5. RELEASE THE SERVICE MODE

- Turn off TV set and turn on again or turn off by the remote commander, and turn off by the remote commander again by stand-by state to disappear serivce display and set to normal TV mode.

6. WRITING "STANDARD VALUE"

1) Set to service mode.
2) When push 5 button on the remote commander green colored "INITIAL write" indicates on the screen right above. Continuing to press 0 button while words are displaying (about 3 seconds). Display turns to red colored "INITIAL write" then the screen become pitch-dark and select 1ch about 5 seconds after. Then it turns green colored "G" display.

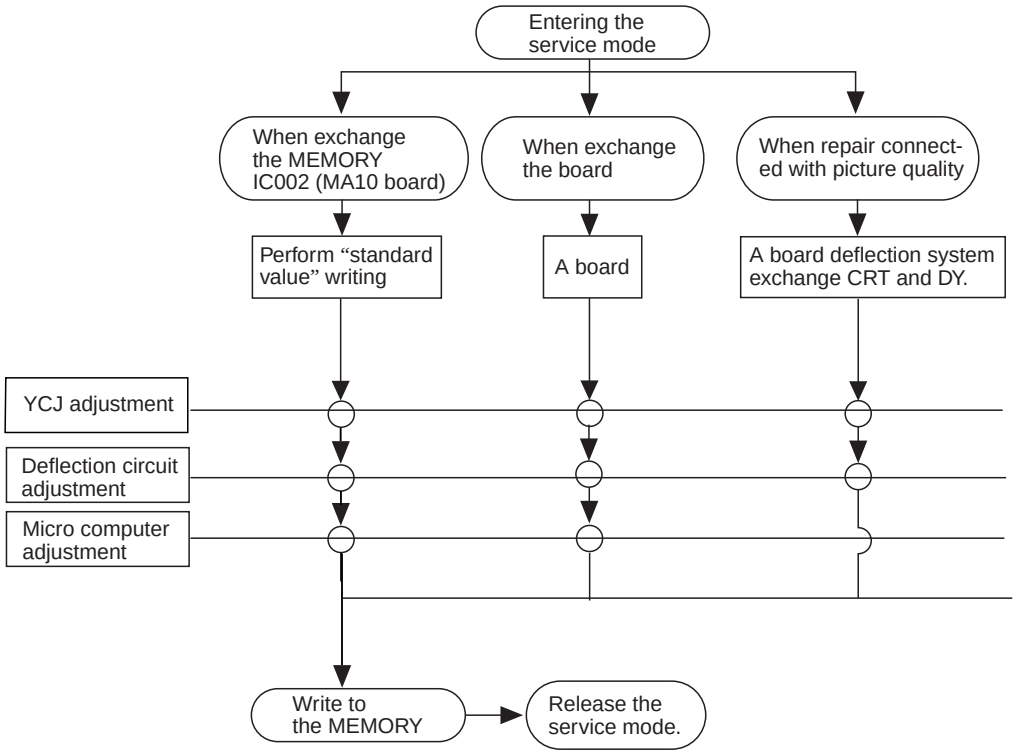
   Perform writing "standard value" standard data in micro computer will write to the MEMORY and set to initialization state all.

Note: When exchange only MEMORY IC002, perform "standard value" writing in the begginning.

5-2. ADJUSTMENT METHOD

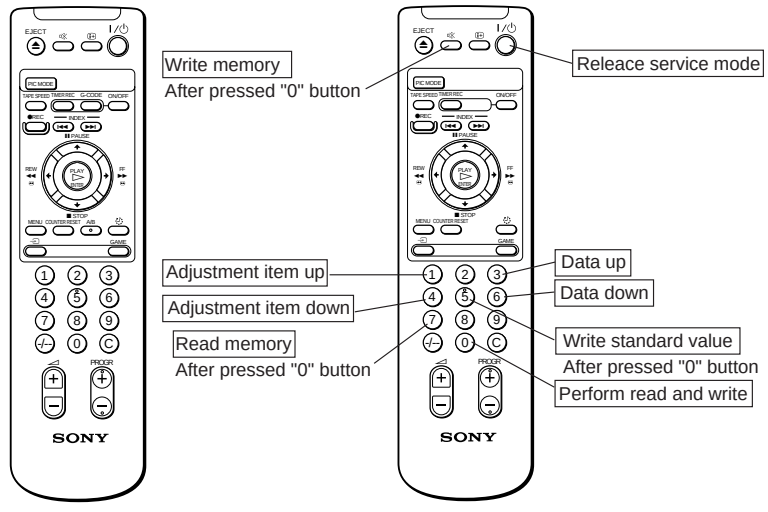
Service adjustment to this model can be performed with the supplied Remote Control Commander RM-955, 956.

- **HOW TO ENTER INTO SERVICE MODE**



Note : • Write to the MEMORY every performing one item adjustment.
• Before writing to the MEMORY adjusted data would not memorize when turn off.

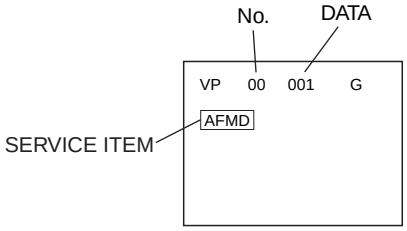
- **REMOTE COMMANDER'S FUNCTION IN SERVICE MODE**



RM-955
(Same as RM-956)

RM-956

- **SERVICE MODE DISPLAY**



5-3. SERVICE DATA

No.	DISP	DATA RANGE	STANDARD DATA	ITEM	DEVICE
VP0	AFC	00-03	00	AFC LOOP GAIN SWITCHING	CXA2130S (Y/C/J)
VP1	VPOS	00-3F	21	V POSITION	
VP2	VSIZ	00-3F	21	V SIZE	
VP3	SCOR	00-0F	07	S CORRECTION	
VP4	VLIN	00-0F	07	V LINIARITY	
VP5	HPOS	00-3F	1E	HORIZONTAL POSITION	
VP6	HSIZ	00-3F	21	H SIZE	
VP7	AFBW	00-0F	07	AFC BOW	
VP8	AFAG	00-0F	07	AFC ANGLE	
VP9	TRAP	00-0F	07	TRAPEZIUM	
VP10	PAMP	00-3F	0B	PIN AMPLITUDE	
VP11	UCPN	00-3F	1F	UPPERSIDE CORNER PIN	
VP12	LCPN	00-3F	1F	LOWERSIDE CORNER PIN	
VP13	HBLK	00-01	00	H BLANKING	
VP14	LBLK	00-0F	07	LEFT H BLANKING	
VP15	RBLK	00-0F	07	RIGHT H BLANKING	
VP16	VUND	00-01	00	V UNDER SCAN	
VP17	EHT	00-0F	07	EHT COMP	
VP18	HSS	00-01	00	SLICE LEVEL OF H SYNC SEPARATION	
VP19	VSS	00-01	00	SLICE LEVEL OF V SYNC SEPARATION	
VP20	HMSK	00-01	01	H MASK	
VP21	RAMP	00-3F	20	R DRIVE	
VP22	GAMP	00-3F	1F	G DRIVE	
VP23	BAMP	00-3F	*1F	B DRIVE	
VP24	RCUT	00-0F	09	R CUTOFF	
VP25	GCUT	00-0F	07	G CUTOFF	
VP26	BCUT	00-0F	07	B CUTOFF	
VP27	SCOL	00-3F	19	SUB COLOR	
VP28	SHUE	00-1F	07	SUB HUE FOR RF INPUT	
VP29	SBRT	00-3F	1F	SUB BRIGHT	
VP30	SSHP	00-0F	07	SUB SHARPNESS	
VP31	SHPF	00-01	00	SHARPNESS F0 SWITCHING	
VP32	PREL	00-01	00	PRE/OVER-SHOOT RATIO SWITCHING	
VP33	GAMM	00-03	02	GAMMA CORRECTION	
VP34	ABLM	00-01	*01	ABL MODE	
VP35	VTH	00-01	01	ABL VTH	
VP36	DYCL	00-01	01	DYNAMIC COLOR	
VP37	YDC	00-01	01	DC TRAN	
VP38	RON	00-01	01	R ON	
VP39	GON	00-01	01	G ON	
VP40	BON	00-01	01	B ON	
VP41	CDMD	00-03	00	COUNT DOWN MODE	
VP42	HOSC	00-0F	07	H VCO'S OSCILLATION	
VP43	VMSW	00-01	00	VM SW(0:ON,1:OFF)	
VP44	YDE	00-0F	08	Y DELAY	
VP45	PAF	00-03	00	PB AFC	
VP46	IDS	00-03	01	ID START	
VP47	IDP	00-03	01	ID STOP	
VP48	IDL	00-03	02	ID LEVEL	
VP49	BELL	00-3F	22	BELL F0	
VP50	VSHU	00-0F	06	SUB HUE FOR LINE INPUT,PB	

No.	DISP	DATA RANGE	STANDARD DATA	ITEM	DEVICE
MS0	NDL	00-FF	52	NICAM SEARTH DELAY	
MS1	AGC	00-01	01	AGC SWITCH	
MS2	REL	00-3F	28	AGC GAIN	
MS3	CRM	00-01	00	CARRIER MUTING	
MS4	ACO	00-01	01	AUDIO CLOCK OUT	
MS5	FP	00-7F	1B		
MS6	FPM	00-7F	32		
MS7	FH	00-7F	2D		
MS8	FHM	00-7F	65		
MS9	NIP	00-7F	6D	NICAM PRESCALE	
MS10	ERR	00-FF	50	AUTO-FM SWITCH THRESHOLD	
MS11	VOL	00-FF	6D	INTELLIGENT VOLUME	

No.	DISP	DATA RANGE	STANDARD DATA	ITEM	DEVICE
OP0	OSDH	00-3F	06	OSD HORIZONTAL POSITION	CXP85460 (μ-COM)
OP1	NS	00-01	01	MENU FOR NS(0:OFF,1:ON)	
OP2	ODL	00-FF	08	ON DELAY TIMER	
OP3	HDCG	00-03	01	HEADCLOG DETECT(0:OFF,1:ON)	
OP4	APC	00-01	00	PLL-switch	
OP5	ID0	00-01	00		
OP6	ID1	00-01	00		
OP7	ID2	00-01	01		
OP8	ID3	00-01	00		

5-4. A BOARD ADJUSTMENT

1. H OSC ADJUSTMENT

1) Input select should be selected LINE input (no signal).
2) Connect a frequency counter to TP801 (A board).
3) Adjust service data "VP42" (HOSC) to become 15.690kHz ± 25Hz.

2. PICTURE QUALITY ADJUSTMENT

2-1. SUB HUE, SUB COLOR adjustment. (For RF input)

1) Receive RF NTSC COLOR BAR signal (B OUT signal).
2) Color Condition
   - Color 50%
   - HUE center 50%
   - Picture 80%

   * H white condition is "OFF" (VP36 : DYCL "= 00")
3) Adjust service data (VP28 : SHUE) for CN308 ⑥ pin B OUT waveform shown $V_{B2} = V_{B3}$ (SUB HUE).
4) Adjust service data (VP27 : SCOL) for CN308 ⑥ pin B out waveform shown $V_{B1} = V_{B4}$ (SUB COLOR).

Note : Repeat the above steps 2) and 3) untill an optimum value is obtained.

5) Add the figure of each step of SUB HUE and SUB COLOR shown below to the above adjustment data.

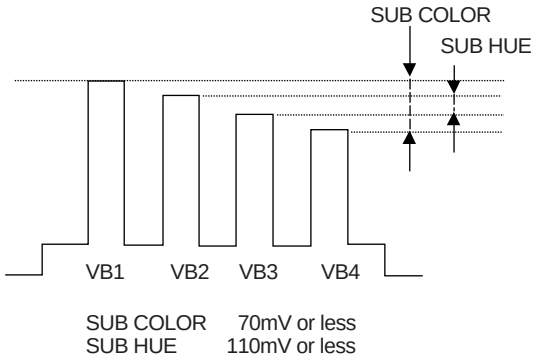


Fig.5-1

   - SUB HUE : From just flat VP28 : SHUE (TV) 0 STEP
   - SUB COLOR : From just flat VP27 : SCOL 0 STEP

6) Write SUB HUE, SUB COLOR for "VIDEO" the values which are same as 4).

2-2. SUB HUE adjustment (For LINE input)

1) Input the NTSC COLOR BAR Signal to LINE INPUT.
2) Color Condition
   - Color 50%
   - HUE center 50%
   - Picture 80%

   * H white condition is "OFF" (VP36 : DYCL = "00")
3) Adjust service data (VP50 : VSHU)for CN308 ⑥ pin B OUT waveform shown $V_{B2} = V_{B3}$.
4) Write SUB HUE (for LINE INPUT)

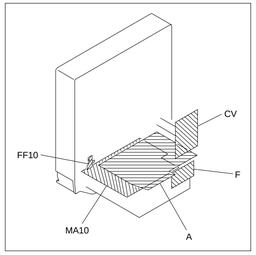
MEMO

TV BLOCK

SECTION 6
DIAGRAMS

6-1. BLOCK DIAGRAMS

6-2. CIRCUIT BOARDS LOCATION



6-3. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

Note:

- All capacitors are in μF unless otherwise noted. pF: μμF
  Capacitors without voltage indication are all 50V.
- All resistors are in ohms.
  kΩ = 1000Ω, MΩ = 1000kΩ
- Indication of resistance, which does not have one for rating electrical power, is as follows.

  Pitch: 5 mm
  Rating electrical power: 1/4W(CHIP:1/10W)

- : nonflammable resistor.
- : fusible resistor.
- : internal component.
- : panel designation and adjustment for repair.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- : earth-chassis.
- The components identified by C in this basic schematic diagram have been carefully factory-selected for each set in order to satisfy regulations regarding X-ray radiation.
  Should replacement be required, replace only with the value originally used. (Refer to PM601,R614,C614,IC607 and R638 adjustment on Page 70 .)
- When replacing the part in below table, be sure to perform the related adjustment.

Adjustment (C)
PM601,R614,C614,IC607, R638 ..... A Board

- Readings are taken with a color-bar signal input.
- Readings are taken with a 10MΩ digital multimeter.
- Voltage variations may be noted due to normal production tolerances.
- All voltages are in V.
- Circled numbers are waveform reference.
- : B + line
- : B – line.
- : signal path.

Reference information

RESISTOR	: RN	METAL FILM
	: RC	SOLID
	: FPRD	NONFRAMMABLE CARBON
	: FUSE	NONFRAMMABLE FUSIBLE
	: RW	NONFRAMMABLE WIREWOUND
	: RS	NONFRAMMABLE METAL OXIDE
	: RB	NONFRAMMABLE CEMENT
	:	ADJUSTMENT RESISTOR
COIL	: LF-BL	MICRO INDUCTOR
CAPACITOR	: TA	TANTALUM
	: PS	STYROL
	: PP	POLYPROPYLENE
	: PT	MYLAR
	: MPS	METALIZED POLYESTER
	: MPP	METALIZED POLYPROPYLENE
	: ALB	BIPOLAR
	: ALT	HIGH TEMPERATURE
	: ALR	HIGH RIPPLE

Terminal name of semiconductors in silk screen printed circuit (✻)

	Device	Printed symbol	Terminal name	Circuit
①	Transistor	T	Collector / Base / Emitter	
②	Transistor	—	Collector / Base / Emitter	
③	Diode		Cathode / Anode	
④	Diode	T	Cathode / Anode (NC)	
⑤	Diode	—	Cathode / Anode (NC)	
⑥	Diode	T	Common / Anode / Cathode	
⑦	Diode	—	Common / Anode Cathode	
⑧	Diode	T	Common / Anode / Anode	
⑨	Diode	—	Common / Anode Anode	
⑩	Diode	T	Common / Cathode / Cathode	
⑪	Diode	—	Common / Cathode Cathode	
⑫	Diode		Anode Cathode / Anode Anode / Cathode Anode	

Ver.1.6

(Chip semiconductors that are not actually used are included.)

Note: The components identified by shading and mark B are critical for safety. Replace only with part nummber specified.

A BOARD

IC

IC101	C-4
IC103	A-4
IC301	E-2
IC501	C-1
IC601	E-7
IC602	C-4
IC603	D-7
IC604	D-4
IC605	D-6
IC606	C-6
IC607	D-4
IC608	D-2
IC801	E-1

TRANSISTOR

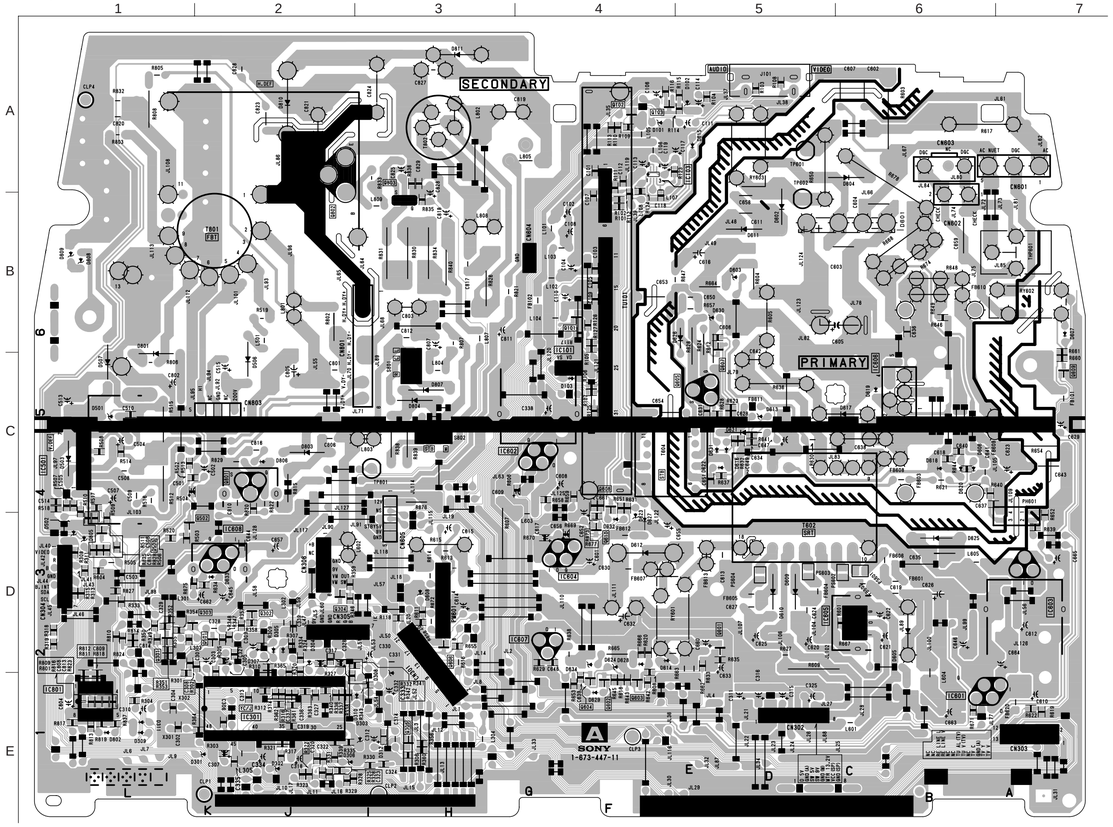
		✻
Q101	B-4	①
Q102	A-4	①
Q103	A-4	①
Q301	D-1	①
Q302	D-2	①
Q303	D-2	①
Q304	D-2	①
Q305	E-3	①
Q501	D-2	①
Q502	D-2	①
Q503	D-1	①
Q601	D-5	①
Q602	E-4	①
Q604	E-4	①
Q605	C-5	-
Q606	D-3	①
Q607	C-5	①
Q608	D-4	①
Q609	C-7	①
Q610	D-4	①
Q801	C-2	-
Q802	B-2	-
Q803	B-3	-

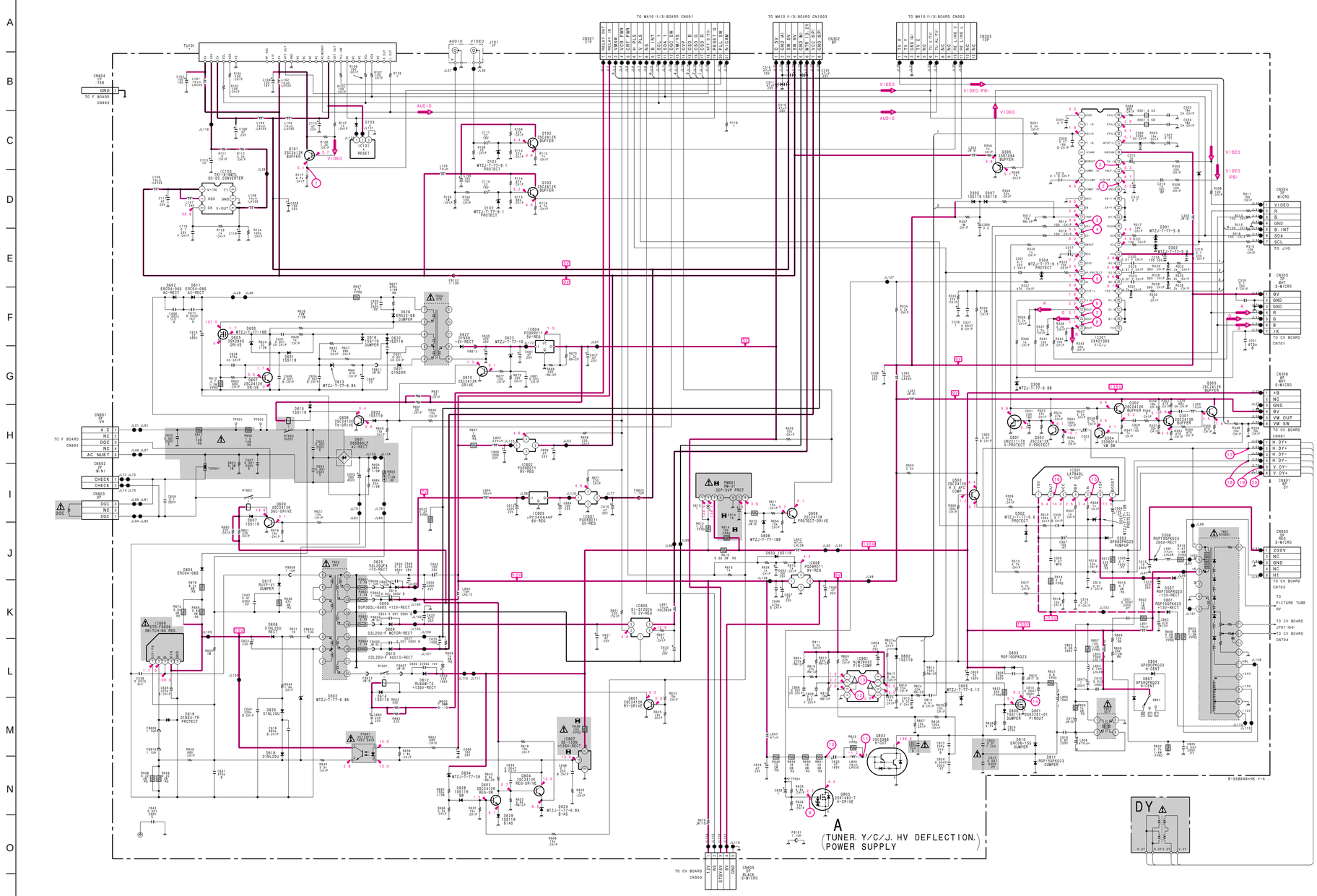
DIODE

		✻
D101	A-4	
D102	A-5	
D103	C-4	
D301	E-2	
D302	E-2	
D304	E-2	
D305	D-2	
D307	D-2	
D308	E-3	
D501	C-1	
D502	D-1	
D503	C-1	
D506	C-2	
D507	C-1	
D601	B-6	
D602	B-5	
D603	B-5	
D604	B-6	
D605	D-6	
D606	C-6	
D607	C-7	
D608	D-3	
D609	D-5	
D610	D-5	
D611	B-5	
D612	D-4	
D613	C-5	
D614	D-4	
D615	A-5	
D616	C-5	
D617	C-6	
D618	C-6	
D619	C-6	
D620	C-6	
D621	C-5	
D622	C-5	
D623	D-4	
D624	E-4	
D625	D-6	
D626	E-4	
D627	D-4	
D628	C-5	
D629	E-4	
D630	B-5	
D631	C-5	
D632	D-4	
D633	D-2	
D634	D-4	
D801	C-1	
D802	A-1	
D803	C-2	
D804	A-3	
D805	D-1	
D806	C-2	
D807	A-3	
D810	A-2	
D811	A-3	

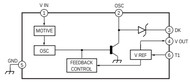
NOTE:
The circuit indicated as left contains high voltage of over 600 Vp-p. Care must be paid to prevent an electric shock in inspection or repairing.

– A BOARD –

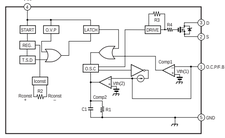




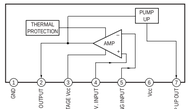
ABOARD : IC103 TK11819M



ABOARD : IC606 STR-F6614



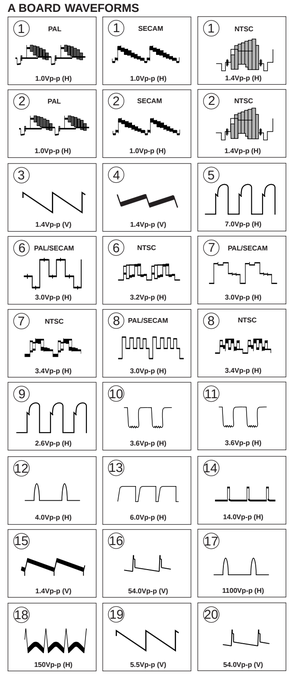
ABOARD : IC501 LA7840L

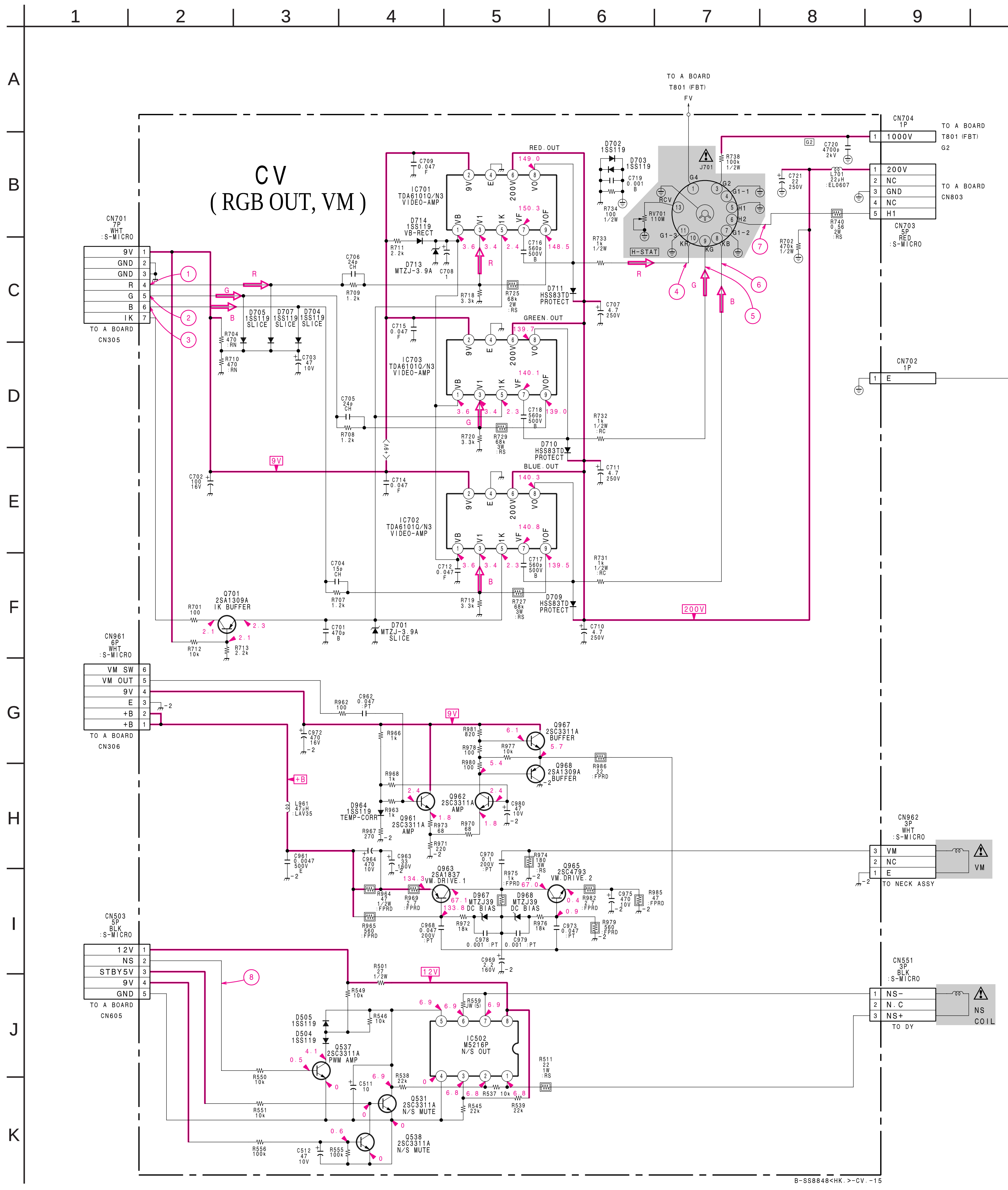


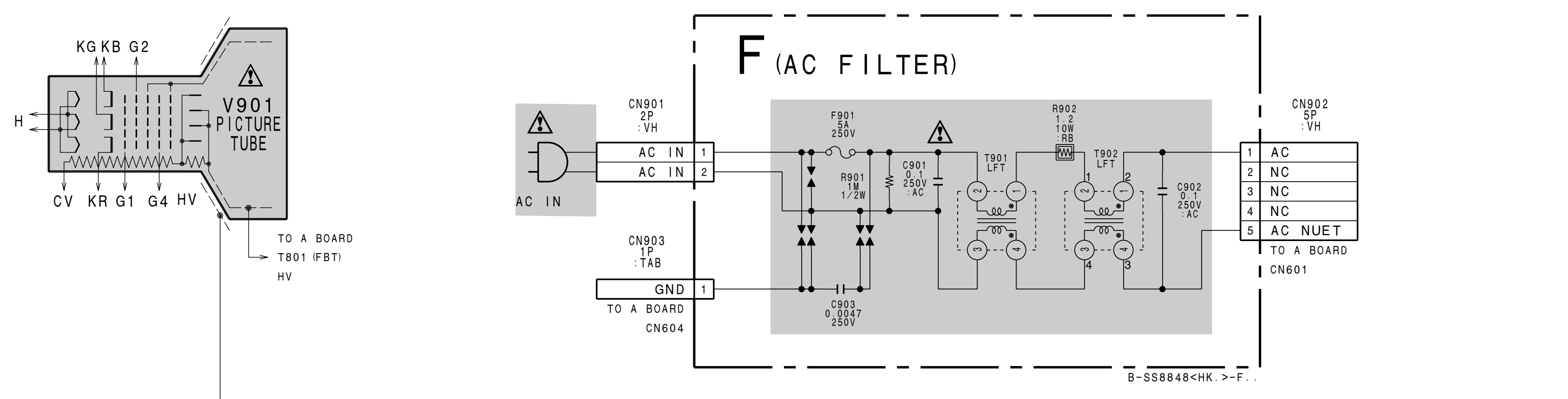
A BOARD ✱ mark LIST

Ref No.	KV-VF21M77	KV-VF21M40/M70
D103	1SS119	Not used
IC101	S-80743AL-Z	Not used
R118	Not used	0 : CHIP
R125	0 : CHIP	Not used
TU101	BTF-WG441	BTF-LG443

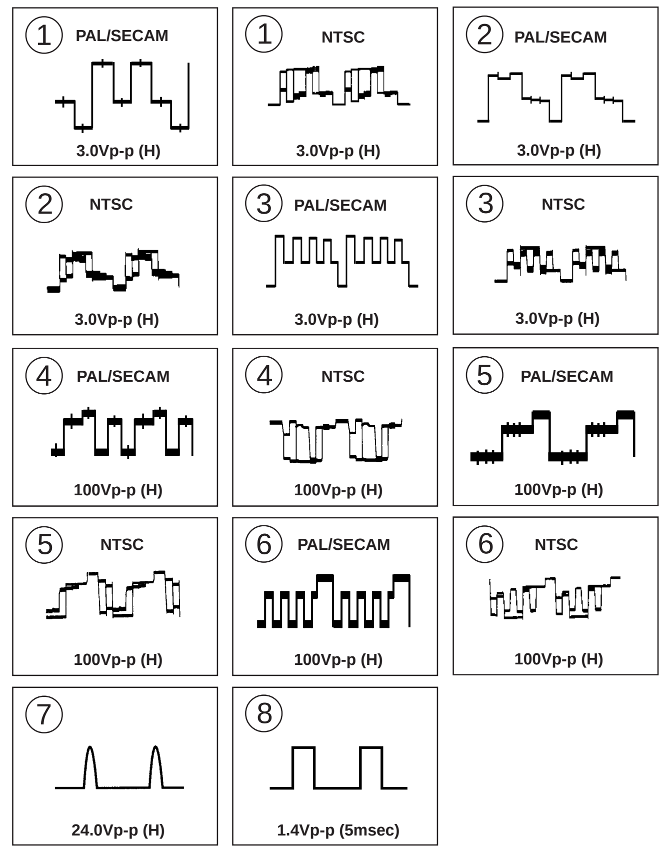
A BOARD WAVEFORMS



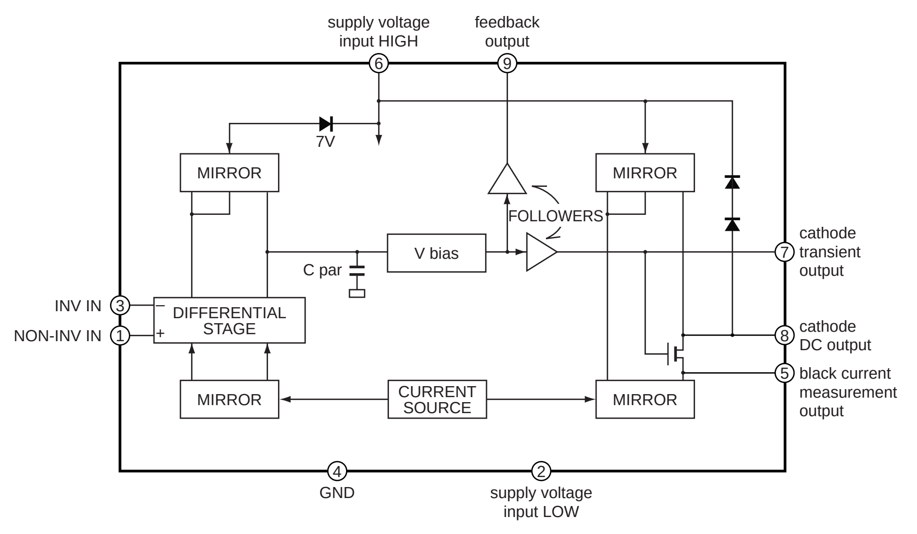




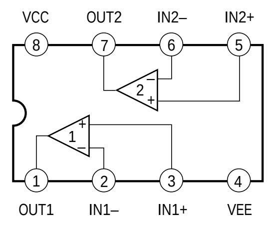
CV BOARD WAVEFORMS

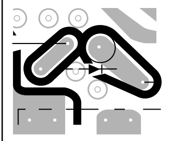


CV BOARD : IC701,702,703 TDA6101Q/N3



CV BOARD : IC502 M5216P

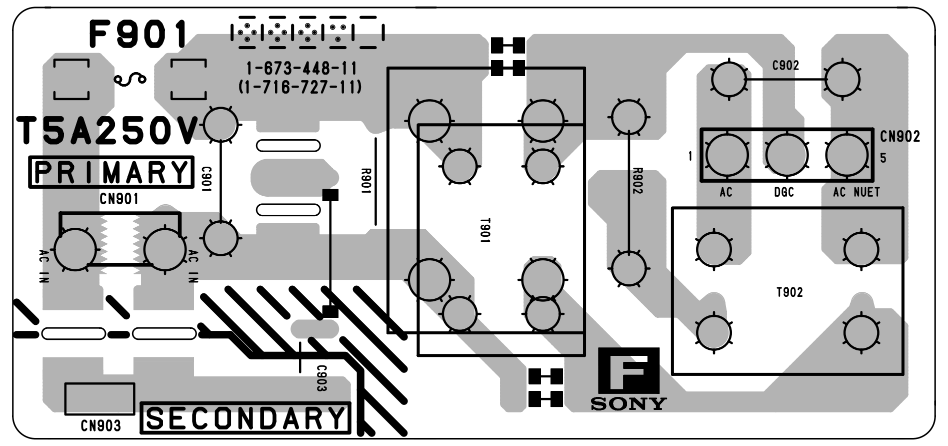




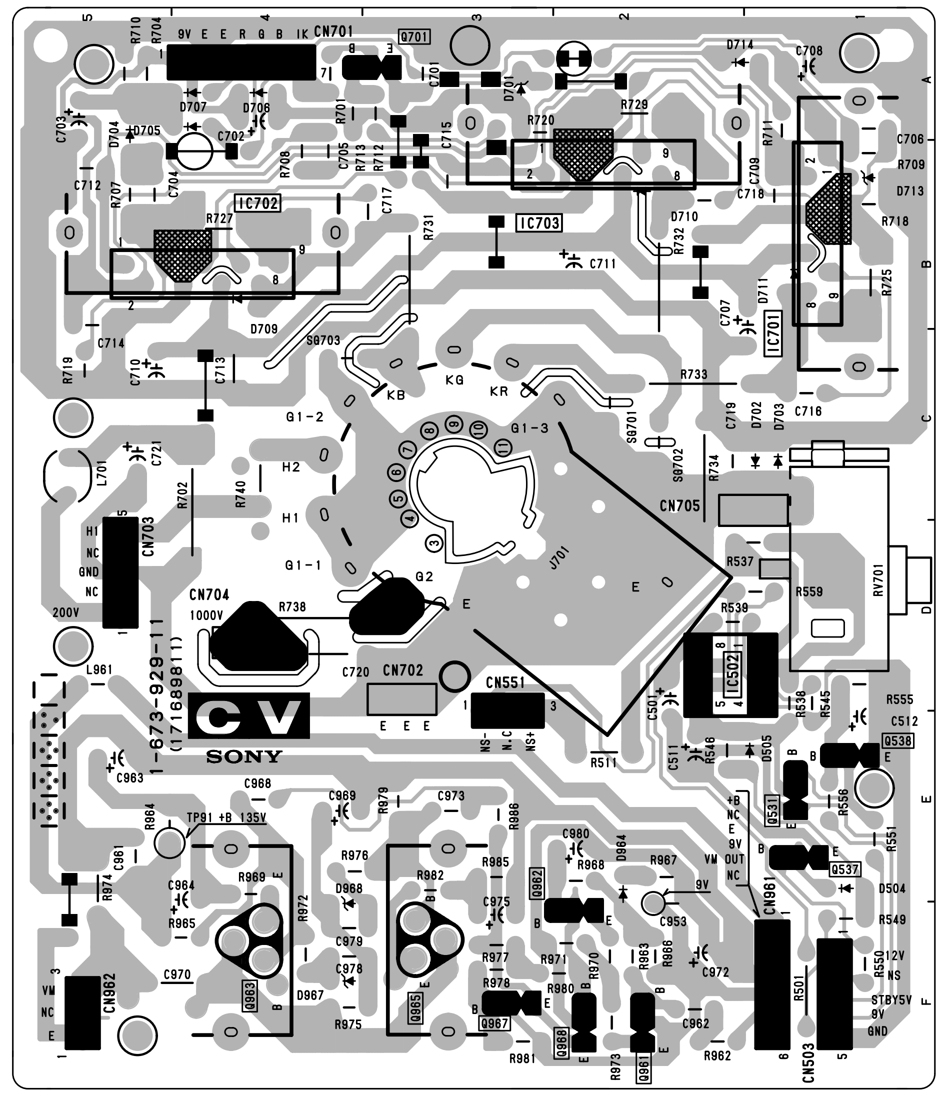
NOTE:
The circuit indicated as left contains high voltage of over 600 Vp-p. Care must be paid to prevent an electric shock in inspection or repairing.

CV [RGB OUT,VM] **F** [AC FILTER]

– F BOARD –



– CV BOARD –



VIDEO section

Schematic diagram
← **A** board

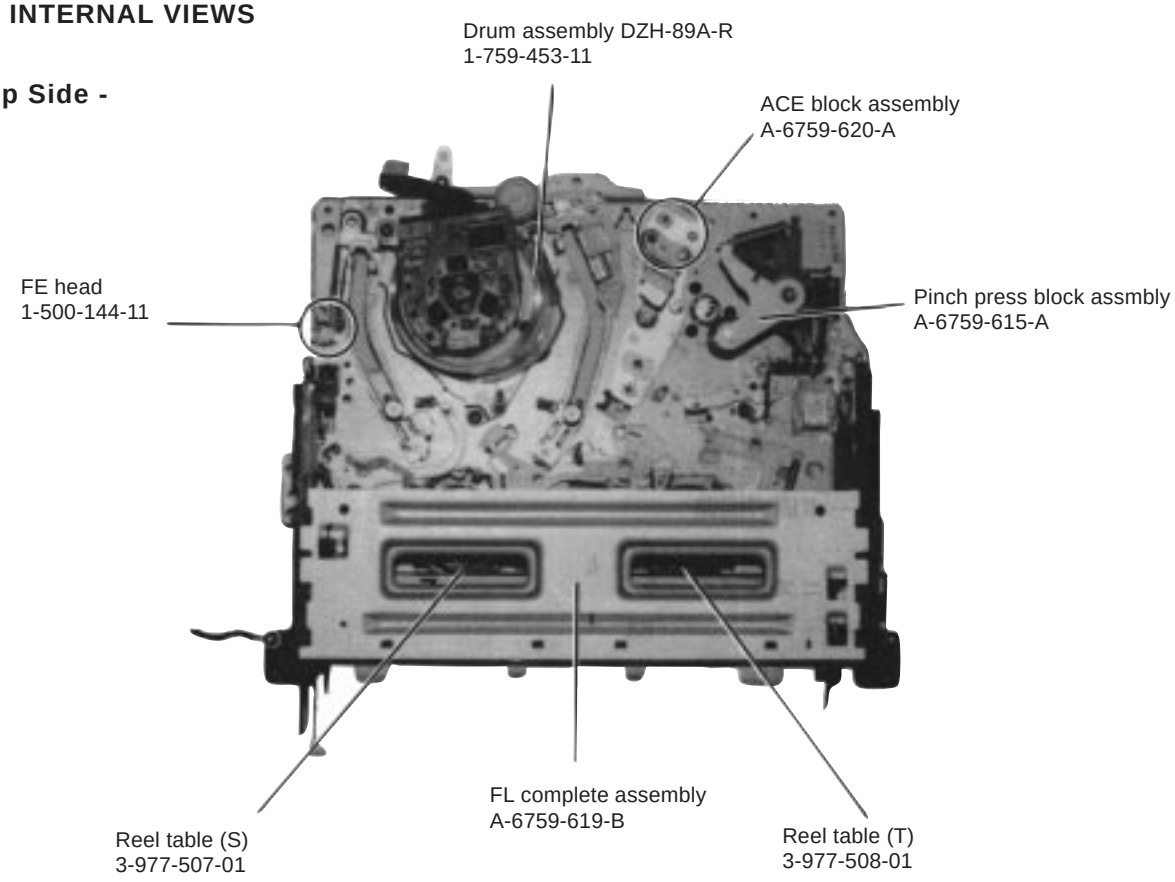
Schematic diagrams
CV, **F** boards →

TABLE OF CONTENTS

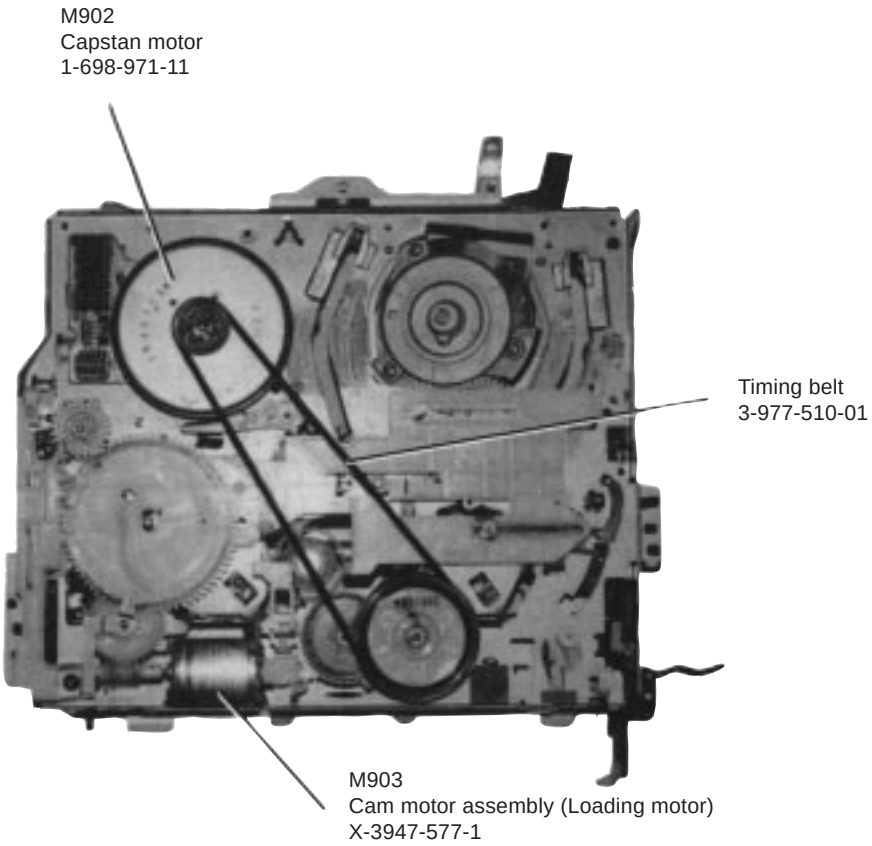
SECTION 1
GENERAL

1-1. INTERNAL VIEWS

- Top Side -

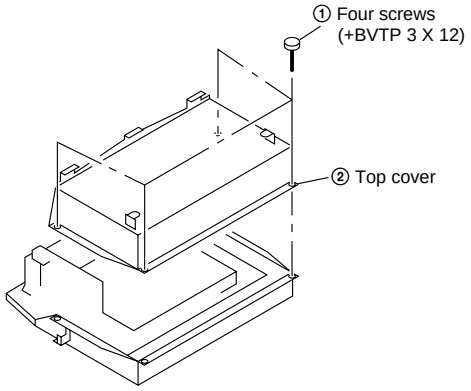


- Bottom Side -

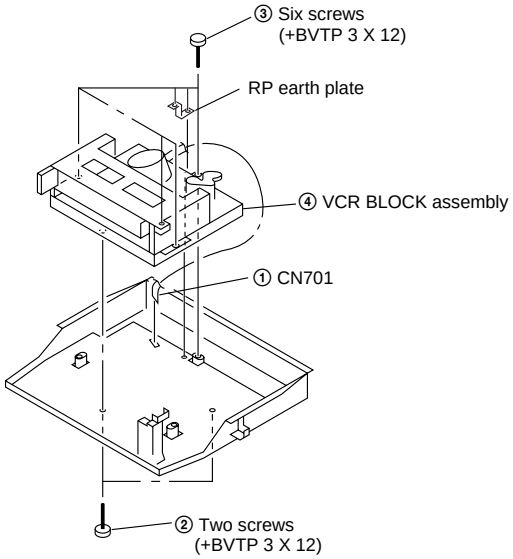


SECTION 2
DISASSEMBLY

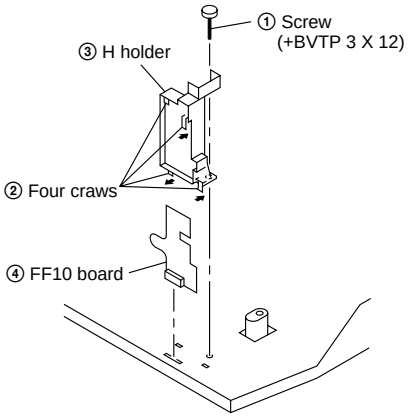
2-1. TOP COVER REMOVAL



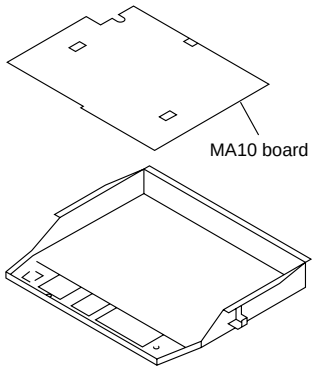
2-2. VCR BLOCK ASSY REMOVAL



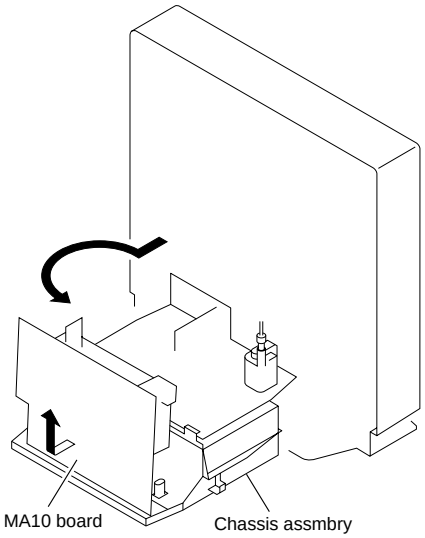
2-3. FF10 BOARD REMOVAL



2-4. MA10 BOARD REMOVAL



2-5. SERVICE POSITION (MA10 BOARD)



SECTION 3
CIRCUIT ADJUSTMENTS

Necessary items and indications for total adjustment of electric circuit of this unit will be described in this chapter.

[INSTRUMENTS TO BE USED]

1) Color TV
2) Signal or dual trace type oscilloscope, band more than 30 MHz, delay, as provided.
3) Frequency counter (4 digits or more)
4) PAL pattern generater
5) Digital voltmeter
6) Audio level meter
7) Audio generator
8) Attenuator
9) Distortion meter
10) Alignment tape
    Part code : H7099052H (MH-2)

[CONNECTION]

Unless otherwise specified, connect and adjust the measurement equipment as follows.

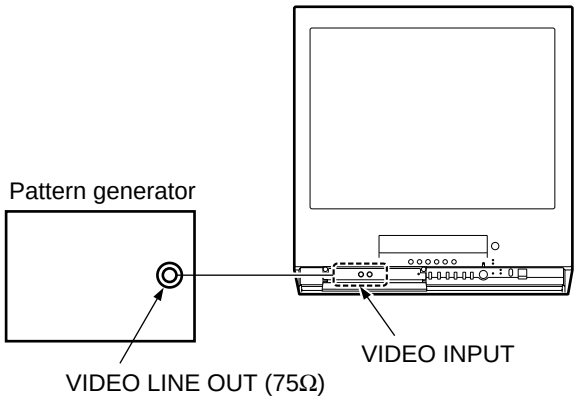


Fig.3-1

[SET-UP FOR ADJUSTMENT]

The video signal from the pattern generator is used as adjustment signal for electrical adjustment. This video signal should meet the requirement. Connect the oscilloscpe to the video input terminal on the MF 1 board and make sure that the amplitudes of sync signal of video signal, video portion and burst signal are flat at approximately 0.3, 0.7 and 0.3 V, respectively, and that the level ratio of the burst signal and “red siganl” are 0.30 : 0.66, Fig.3-2 shows video signals (color bars) used in adjusting the electrical adjustment.

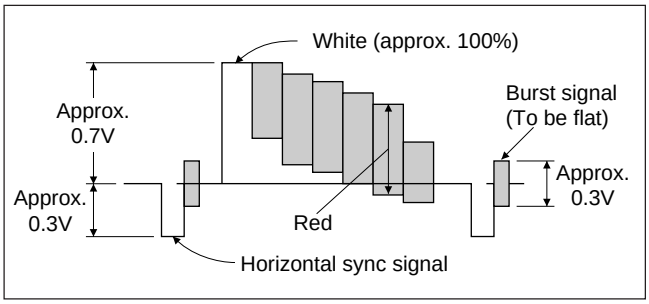


Fig.3-2

Alignment Tape (MH-2)

	Time	Video signal	Audio signal
1	10 minutes	Starir-step	6kHz
2	5 minutes	-	3kHz
3	10 minutes	Color bar	1kHz
4	3 minutes	RF sweep	-

[SPECIFIED INPUT/OUTPUT LEVEL IMPEDANCE]

Input/Output terminal

Video input	Pin jack
	Input signal : 1Vp-p, 75Ω, unbalanced
	Sync negative
AUDIO LINE IN	Pin jack
	Input level : -7.5dBs
	(0dBs=0.775Vrms)
	Input impedance : More than 47kΩ

X'tal OSC CHECK

Mode	PB
Signal	Alignment tape, Stair step
Measurement Point	MA10 board Q823 emitter(NTSC) IC802 ⑤⑨pin(PAL)
Measurement Equipment	Oscilloscope
Specified Value	500±200mVp-p

Check: 1)Confirm the frequency is 3.579545MHz±82Hz(NTSC), and 4.433619MHz±100Hz(PAL).
2)Confirm the waveform amplitude is 500±200mVp-p.

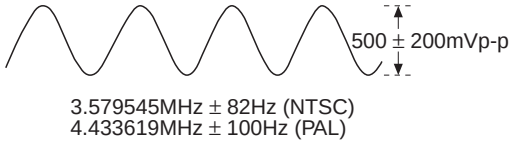


Fig.3-3

CARRIER DEVIATION CHECK

Mode	E-E
Signal	Color bar
Measurement Point	MA10 board IC802 ⑱pin
Measurement Equipment	Spectrum Analyzer
Specified Value	f_2-f_1=1.00±0.08MHz

Check: Confirm f_2-f_1=1.00±0.08MHz
Confirm f_1=3.40±0.13MHz(NTSC), and 3.80±0.13MHz(PAL)

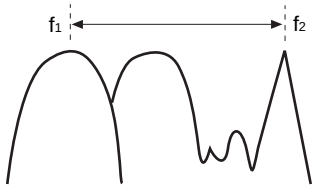


Fig.3-5

SYNC AGC CHECK

Mode	E-E
Signal	Color bar
Measurement Point	MA10 board Q830 emitter
Measurement Equipment	Oscilloscope
Specified Value	1.0±0.1Vp-p

Check: Confirm the waveform amplitude is 1.0±0.1Vp-p.

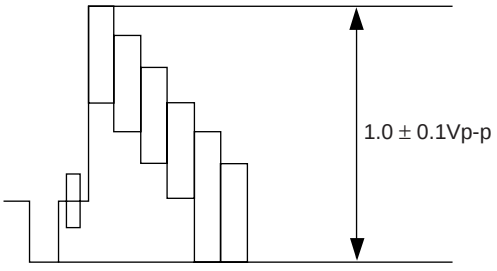


Fig.3-4

WHITE/DARK CLIP CHECK

Mode	E-E
Signal	Color bar
Measurement Point	MA10 board IC802 ㊲pin
Measurement Equipment	Oscilloscope
Specified Value	190±20%(White), 55±20%(Dark)

Preparation: Add 3.3kΩ resistor between IC802 ㊷pin and GND.

Check: Taking the height from sync to white level as 100%, check white clip and dark clip.

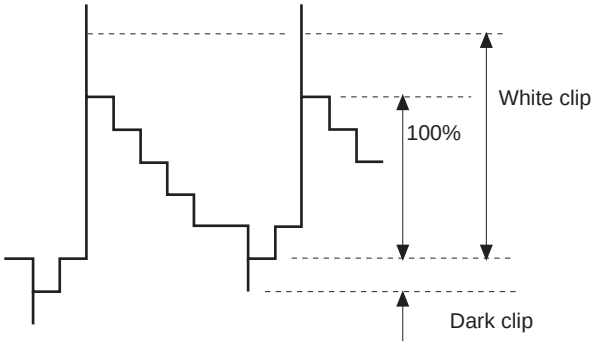


Fig.3-6

REC Y LEVEL CHECK

Mode	E-E(SP)
Signal	No signal
Measurement Point	MA10 board IC802 ⑱pin
Measurement Equipment	Oscilloscope
Specified Value	240±70mVp-p(NTSC) 260±70mVp-p(PAL)

Check: Confirm the Vp-p of the waveform is 220±70mVp-p.

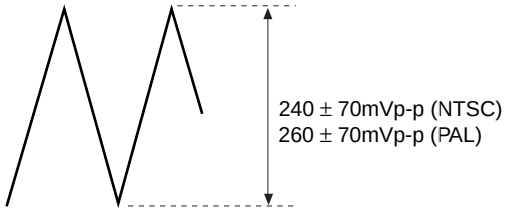


Fig.3-7

PB Y LEVEL CHECK

Mode	PB
Signal	Color bar
Measurement Point	MA10 board Q830 emitter
Measurement Equipment	Oscilloscope
Specified Value	1.0±0.1Vp-p

Check: Confirm the Vp-p of the waneform is 1.0±0.1Vp-p.

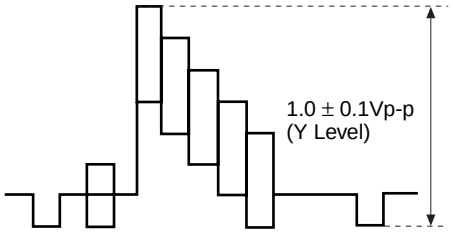


Fig.3-9

REC CHROMA CHECK

Mode	REC(SP)
Signal	Color bar
Measurement Point	MA10 board IC802 ⑭pin
Measurement Equipment	Oscilloscope
Specified Value	350±60mVp-p

Check: Confirm the Vp-p of the waveform is 350±60mVp-p.

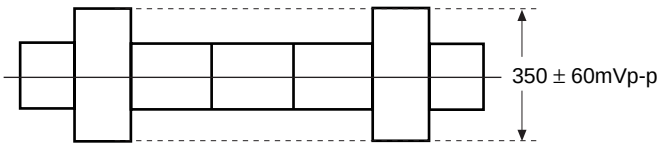


Fig.3-8

SWITCHING LOCATION ADJUSTMENT WHEN CHANGE DRUM

1.VIDEO SWITCHING LOCATION ADJUSTMENT

1) Connect between CN1004 pin ② and pin ⑥ on MA10 board.
2) Insert switching over up tape(KRV-23PS)and push the play back key.
3) Push the channel + and-keys simultaneously.
4) Short instant between CN1004 pin ① and pin ⑥.(LED goes on and off)

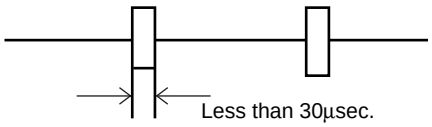


Fig.3-10

5) Adjust the channel+/- keys of the set so that waveform width of CN702 pin ② become minimum.(less than 30µsec.)
6) Push the pause key of the set.(LED wink disappear)
7) Remove the connection between CN1004 pin ② and pin ⑥.

SECTION 4

INTERFACE, IC PIN FUNCTION DESCRIPTION

4-1. μ-COM PORT FUNCTION DESCRIPTION (MA10 BOARD IC001)

Pin No.	Signal	I/O	Function
1	S SEL F	I	S-INPUT SELECT (FRONT)
2	S SEL R	I	S-INPUT SELECT (REAR)
3	ST	I	TU STEREO MODE
4	BIL	I	TU BILINGUAL MODE
5	DGC SW	–	DGC ON/OFF CONTROL
6	ST/ MONO	I	SET MODE STEREO/MONO
7	–	–	
8	MAIN /SUB	O	TU MAIN/SUB CONTROL
9	F MONO	O	TU FOCE MONO CONTROL
10	VM SW	O	VM ON/OFF CONTROL
11	GP A	I	"REC PON" SW A
12	GP B	I	"REC PON" SW B
13	GP C	I	"REC PON" SW C
14	ASURA CS	O	CHIP SELECT FOR ASURA
15	SLAVE RESE	O	RESET FOR ASURA
16	J CLK	O	JUST CLOCK DISABLE ("H" : DISAB)
17	FACT	I	FACTORY MODE
18	1TU /2TU	I	SET MODE 1TU/2TU
19	JUST CLOCK	I	JUST CLOCK DET INPUT
20	SIRCS	I	REMOCON SIGNAL IN
21	HSYNC 1	I	H SYNC DET INPUT (REC)
22	HSYNC 0	I	H SYNC DET INPUT (TV)
23	SI	I	SIGNAL DATA INPUT
24	SO	O	SIGNAL DATA OUTPUT
25	SCK	O	SIGNAL CLOCK OUTPUT
26	Vss	–	
27	B INT	I	BUS INT
28	X TAL	–	
29	EXTAL	–	
30	RESET	–	
31	A MUTE	O	AUDIO MUTE
32	CLK OS	O	CHIP SELECT FOR RT CLOCK
33	KEY2	I	KEY SCAN 2
34	KEY1	I	KEY SCAN 1
35	AFT1	I	AFT DET 1
36	AFT0	I	AFT DET 0
37	OVP	I	OVP DET
38	G SW	I	"REC PON" SW
39	XLC	–	
40	EXLC	–	
41	OSD R	–	
42	OSD G	–	
43	OSD B	–	
44	I	–	
45	YS	–	
46	YM	–	
47	SDA1	O	1^2C BUS DATA FOR YCJ etc
48	SDA0	O	1^2C BUS DATA FOR NVM
49	SCL1	O	1^2C BUS CHECK FOR YCJ etc
50	SCL0	O	1^2C BUS CHECK FOR NVM
51	LED2	O	POWER LED
52	LED1	O	STBY LED
53	NS	O	NS COIL CONTROL (PWM)
54	VOL	O	VOLUME CONTROL (PWM)
55	MP	–	
56	NC	–	
57	Vdd	–	
58	Vss	–	
59	HPULSE	I	
60	VPULSE	I	
61	CRTPOW	O	CRT POWER ON
62	VCRPOW	O	VCR POWER ON
63	M SW	I	MAIN SW
64	SP MUTE	O	SPEAKER MUTE

4-2. SYSTEM CONTROL-VIDEO BLOCK INTERFACE (MA10 BOARD IC402)

Signal	Pin No.	I/O	STOP	FF	REW	TAPE THREADING	TAPE UNTHREADING	PB	PB · PAUSE	SLOW	X2	PICTURE SEARCH CUE	PICTURE SEARCH REVIEW	REC	REC · PAUSE
RF SW P (SW30)	IC402 ①	O	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1	*1
Q VD	IC402 ④	O	L	L	L	L	L	*2	*3	*3	*3	*3	*3	L	L
$\overline{\text{V SYNC}}$	IC402 ⑯	I	*4	*4	*4	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5

*1. 30Hz 50% duty pulse synchronizing with drum rotation.
*2. Normally “L” . “H” when the video signal is not detected.
*3. V period “H” pulse.
*4. “H” in the LP mode. Selected according to the recording mode.
*5. Selected according to the tape recording mode.

4-3. SYSTEM CONTROL-SERVO PERIPHERAL CIRCUIT INTERFACE (MA10 BOARD IC402)

Signal	Pin No.	I/O	STOP	FF	REW	TAPE THREADING	TAPE UNTHREADING	PB	PB · PAUSE	SLOW	X2	PICTURE SEARCH CUE	PICTURE SEARCH REVIEW	REC	REC · PAUSE
REC CTL	IC402 ⑦	O	HI-Z	HI-Z	HI-Z	HI-Z	HI-Z	HI-Z	HI-Z	HI-Z	HI-Z	HI-Z	HI-Z	*1	HI-Z
$\overline{\text{CAP STOP}}$	IC402 ㉞	O (O.D)	L	HI-Z (O.D)	HI-Z (O.D)	HI-Z (O.D)	HI-Z (O.D)	HI-Z (O.D)	L	*3	HI-Z (O.D)	HI-Z (O.D)	HI-Z (O.D)	HI-Z (O.D)	HI-Z (O.D)
STEP PLS	IC402 ㊾	O	L	L	L	L	L	L	L	*2	L	L	L	L	L
$\overline{\text{PB CTL}}$	IC402 ㊼	I	H	*6	*6			*1	H/L	*2	*6	*6	*6	*1	H
DRUM PG	IC402 ㊽	I	*4	*1	*1	*5	*5	*1	*1	*1	*1	*1	*1	*1	*1
DRUM FG	IC402 ㊾	I	*4	*7	*7	*5	*5	*7	*7	*7	*7	*7	*7	*7	*7
CAP FG	IC402 ⑦⓪	I	H/L	*6	*6	*5	*5	*6	H/L	*2	*6	*6	*6	*6	H/L
CAP DA	IC402 ⑦③	O	*8	*8	*8	*8	*8	*9	*8	*8	*9	*9	*9	*9	*8
DRUM DA	IC402 ⑦④	O	*10	*10	*10	*10	*10	*10	*10	*10	*10	*10	*10	*10	*10
CTL RESET	IC402 ⑩	I/O	HI-Z	HI-Z	HI-Z	HI-Z	HI-Z	HI-Z	HI-Z	*11	HI-Z	HI-Z	HI-Z	HI-Z	HI-Z

*1. 30Hz 50% pulse.
*2. Pulse in tape running.
*3. Reverse logic pulse of STEP PLS.
*4. “L” when drum rotation stops.
*5. Unstable period pulse.
*6. Pulse of Period proportionate to tape speed.
*7. 360Hz pulse.
*8. Pulse in tape running.
*9. Approx. 2 msec. period “H” or “L” pulse.
*10. Approx. 1.5 msec. period “H” or “L” pulse.

4-4. SYSTEM CONTROL-MECHANISM BLOCK INTERFACE (MA10 BOARD IC402)

Signal	Pin No.	I/O	EJECTED	CASSETTE LOADING	CASSETTE UNLOADING	TAPE THREADING	TAPE UNTHREADING	STOP	FF	REW	PB	PB · PAUSE	SLOW	X2	PICTURE SEARCH CUE	PICTURE SEARCH REVIEW	REC	REC · PAUSE
CAM UN LOAD	IC402 ⑨	O	HI-Z	H	L	H	L	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7	*7
CAM LOAD	IC402 ⑧	O	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L	L
MODE 1	IC402 ㉒	I	H	L	L	*1	*1	H	H	H	H	H	H	H	H	L	H	H
MODE 2	IC402 ㉑	I	H	L	L	*1	*1	H	H	H	L	L	L	L	L	L	L	L
MODE 3	IC402 ⑳	I	L	L	L	*1	*1	H	L	L	L	L	L	L	L	H	L	L
MODE 4	IC402 ⑲	I	L	H	H	*1	*1	L	H	H	L	L	L	L	L	L	L	L
C IN REC PRF	IC402 ⑰	I	L	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2	*2
T REEL FG	IC402 ㊹	I	H/L	H/L	H/L	H/L	H/L	H/L	*3	*3	*3	H/L	*3	*3	*3	*3	*3	H/L
S REEL FG	IC402 ㊸	I	H/L	H/L	H/L	*3	*3	H/L	*3	*3	*3	H/L	*3	*3	*3	*3	*3	H/L
T/S LED	IC402 ㉟	O (O.D)	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4
$\overline{\text{CAP STOP}}$	IC402 ㉞	O (O.D)	L	L	L	H	H	L	H	H	H	L	*5	H	H	H	H	L
$\overline{\text{CAP RVS}}$	IC402 ㉜	O	L			H	L	H/L	H	L	H	H	H/*5	H	H	L	H	H
T SENS	IC402 ㉛	I	*4	*4	*4	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6
S SENS	IC402 ㉜	I	*4	*4	*4	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6	*6

*1. Uncertainty.
*2. “L” when the erasing protection tab is bent, “H” when not bent.
*3. Pulse of period proportionate to reel rotation speed.
*4. Apporx. 2 msec. period “H” pulse.
*5. Pulse in tape running.
*6. Normally “L”. 2 msec. period “H” pulse when tape top or tape end is detected.
*7. “L” when unloading to switchover. “H” when loading. “HI-Z” when CAM motor is stop.

4-5. SYSTEM CONTROL-SYSTEM CONTROL PERIPHERAL CIRCUIT INTERFACE (MA10 BOARD IC402)

Signal	Pin No.	I/O	Function
$\overline{\text{ASURA RESET}}$	IC402 ㊵	I	Normally "H"."L"when service interruption is detected or restored.
$\overline{\text{ASURA CS}}$	IC402 ㊹	I	Chip select signal from the timer microprocessor. V period “L” pulse.
S IN 0	IC402 ㊺	I	Serial communication data from the timer microprocessor. V period “L” pulse.
S OUT 0	IC402 ㊻	O	Serial communication data to the timer microprocessor. V period “L” pulse.
$\overline{\text{S CLK}}$	IC402 ㊼	I	Serial communication clock with the timer microprocessor. V period “L” pulse.

4-6. SYSTEM CONTROL-AUDIO BLOCK INTERFACE (MA10 BOARD IC402)

Sigmal	Pin No.	I/O	STOP	FF	REW	TAPE LOADING	TAPE UNLOADING	PB	PB · PAUSE	SLOW	X2	PICTURE SEARCH CUE	PICTURE SEARCH REVIEW	REC	REC · PAUSE
A MUTE	IC402 ㊾	O (O.D)	L	L	L	L	L	*1	H	H	H	H	H	L	L

*1. 30Hz 50% duty pulse approximately 5 msec. delayed from RF SW P.

4-7. SERVO/SYSTEM CONTROL PORT FUNCTION DESCRIPTION (MA10 BOARD IC402)

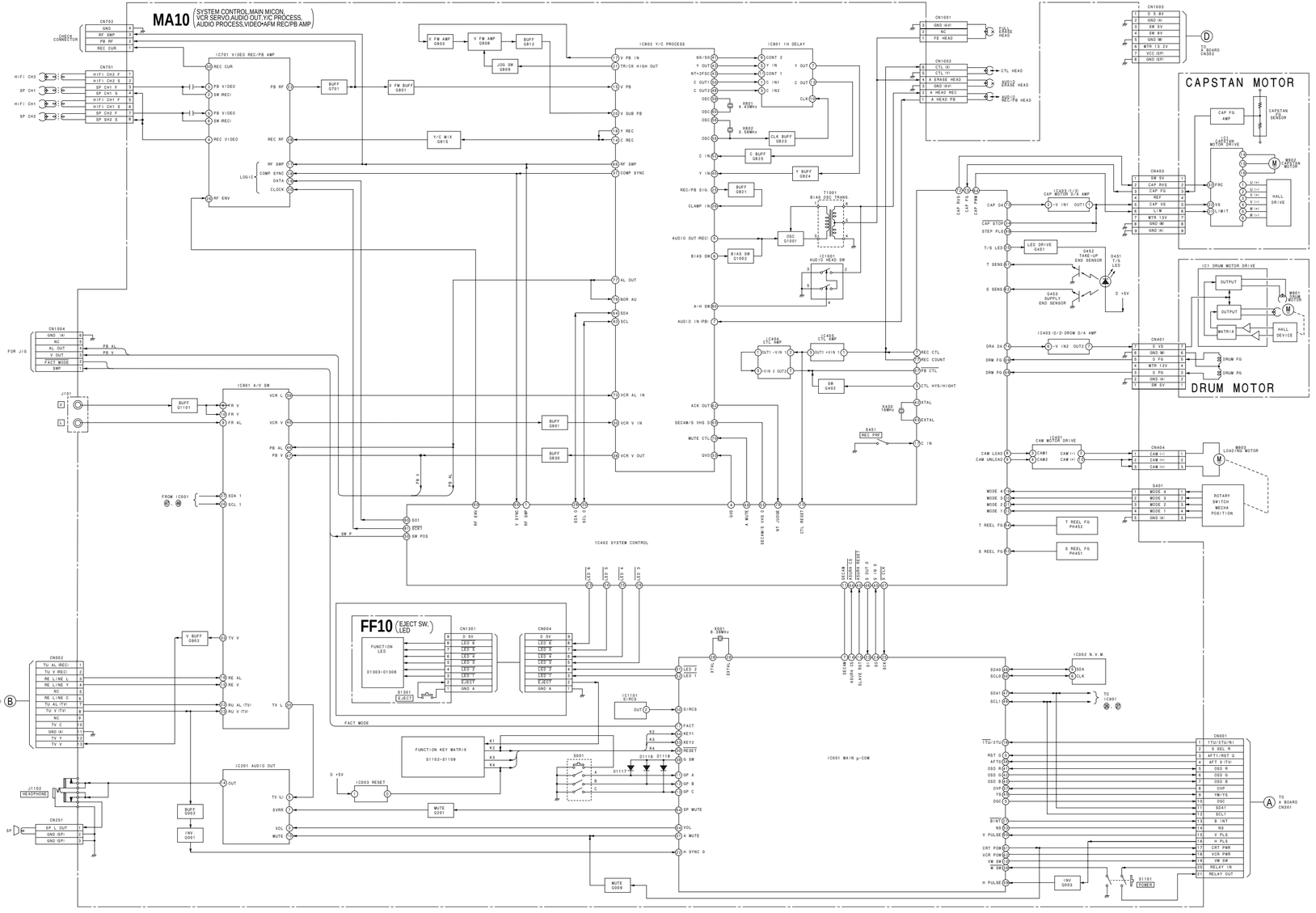
Pin No.	Signal	I/O	Function
1	RF SWP	O	RF SWITCHING PULSE
2	–	–	
3	–	–	
4	QVD	O	QUASI VD
5	CTLHYS HIGH	O	CTL CONTROL
6	–	–	
7	REC CTL	O	REC CTL SIGNAL
8	CAM LOAD	O	CAM LOADING
9	CAM UNLOAD	O	CAM UNLOADING
10	CTL RESET	O	CTL CONTROL
11	–	–	
12	–	–	
13	–	–	
14	–	–	
15	–	–	
16	–	–	
17	C IN	I	CASSETTE IN
18	–	–	
19	MODE4	I	MD MODE DET
20	MODE3	I	MD MODE DET
21	MODE2	I	MD MODE DET
22	MODE1	I	MD MODE DET
23	LED6	O	REC PON LED
24	LED5	O	ON TIMER LED
25	LED4	O	REC LED
26	LED3	O	TIMER REC LED
27	–	–	
28	SDA	I/O	I^2C BUS DATA FOR VIDEO/HiFi
29	–	–	
30	SCL	O	I^2C BUS CLOCK FOR VIDEO/HiFi
31	–	–	
32	–	–	
33	GND	O	
34	CAP STOP	O	
35	T/S LED	O	T/S LED CONTROL
36	GND	O	
37	GND	O	
38	GND	O	
39	MP	–	
40	ASURA RESET	–	
41	Vss	–	
42	XTAL	–	
43	EXTAL	–	
44	ASURA CS	I	ASURA u-COM CHIP SELECT
45	S IN 0	I	SERIAL DATA IN
46	S OUT 0	O	SERIAL DATA OUT
47	S CLK	I	SERIAL CLOCK
48	GND	O	
49	MUTE	O	AUDIO MUTE
50	POS	I	SWITCHING POSITION ADJ MODE

Pin No.	Signal	I/O	Function
51	GND	O	
52	AVss	–	
53	AV ref	–	
54	AVdd	–	
55	SECAM/SVHS	I	SVHS DET IN
56	GND	O	
57	DEW	I	DEW SENSOR
58	GND	O	
59	–	–	
60	RF ENV	I	VIDEO RF ENVELOPE DET
61	T SENS	I	TAPE TOP SENSOR
62	S SENS	I	TAPE END SENSOR
63	SREEL FG	I	S-REEL FG
64	TREEL FG	I	T-REEL FG
65	GND	O	
66	VSYNC	I	V SYNC SIGNAL IN
67	PB CTL	I	PB CTL SIGNAL
68	DRM PG	I	DRUM PG
69	DRM FG	I	DRUM FG
70	CAP FG	I	CAPSTAN FG
71	–	–	
72	CAP RVS	O	CAPSTAN REVERSE
73	CAP DA	O	CAPSTAN D/A OUTPUT
74	DRM DA	O	DRUM D/A OUTPUT
75	JOG	O	JOG CONTROL
76	S VHS	O	S VHS DET OUT
77	REC COUNT	I	REC CTL COUNT
78	–	–	
79	–	–	
80	SO 1	O	SERIAL DATA OUTPUT FOR RP AMP
81	SCK1	O	SERIAL CLOCK FOR RP AMP
82	GND	O	
83	V PB	O	VIDEO PB MODE
84	CAP PWM	O	CAPSTAN
85	–	–	
86	–	–	
87	–	–	
88	Vss	–	
89	Vdd	–	
90	–	–	
91	–	–	
92	–	–	
93	–	–	
94	–	–	
95	–	–	
96	–	–	
97	–	–	
98	–	–	
99	STEP PLS	O	
100	–	–	

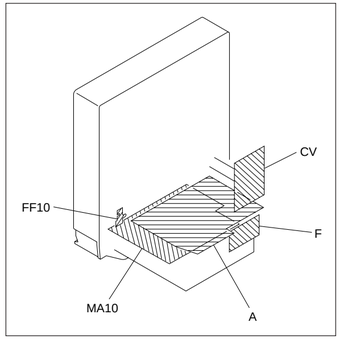
SECTION 5
DIAGRAMS

5-1. BLOCK DIAGRAMS

VIDEO BLOCK



5-2. CIRCUIT BOARDS LOCATION



MA10 (1/3) [SYSTEM CONTROL, MAIN MICON / VCR SERVO, AUDIO OUT]

MA10 (2/3) [Y/C PROCESS]

MA10 (3/3) [VIDEO REC/PB AMP]

5-3. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

Note:

- All capacitors are in μF unless otherwise noted. pF: μμF
  Capacitors without voltage indication are all 50V.
- All resistors are in ohms.
  kΩ = 1000Ω, MΩ = 1000kΩ
- Indication of resistance, which does not have one for rating electrical power, is as follows.

  Pitch: 5 mm
  Rating electrical power: 1/4W(CHIP:1/10W)

- : nonflammable resistor.
- : fusible resistor.
- : internal component.
- : panel designation and adjustment for repair.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- : earth-chassis.

- Readings are taken with a color-bar signal input.
- Readings are taken with a 10MΩ digital multimeter.
- Voltage variations may be noted due to normal production tolerances.
- All voltages are in V.
  no mark : REC/PB
  ( ) : REC
  < > : PB
- Circled numbers are waveform reference.
- : B + line
- : B – line.
- : signal path.

Reference information

RESISTOR	: RN	METAL FILM	CAPACITOR	: TA	TANTALUM
	: RC	SOLID		: PS	STYROL
	: FPRD	NONFRAMMABLE CARBON		: PP	POLYPROPYLENE
	: FUSE	NONFRAMMABLE FUSIBLE		: PT	MYLAR
	: RW	NONFRAMMABLE WIREWOUND		: MPS	METALIZED POLYESTER
	: RS	NONFRAMMABLE METAL OXIDE		: MPP	METALIZED POLYPROPYLENE
	: RB	NONFRAMMABLE CEMENT		: ALB	BIPOLAR
		ADJUSTMENT RESISTOR		: ALT	HIGH TEMPERATURE
COIL	: LF-8L	MICRO INDUCTOR		: ALR	HIGH RIPPLE

Terminal name of semiconductors in silk screen printed circuit (✻)

	Device	Printed symbol	Terminal name	Circuit
①	Transistor	T	Collector / Base T Emitter	
②	Transistor	—	Collector / Base Emitter	
③	Diode		Cathode — Anode	
④	Diode	T	Cathode / Anode T (NC)	
⑤	Diode	—	Cathode / Anode (NC)	
⑥	Diode	T	Common / Anode T Cathode	
⑦	Diode	—	Common / Anode Cathode	

(Chip semiconductors that are not actually used are included.)

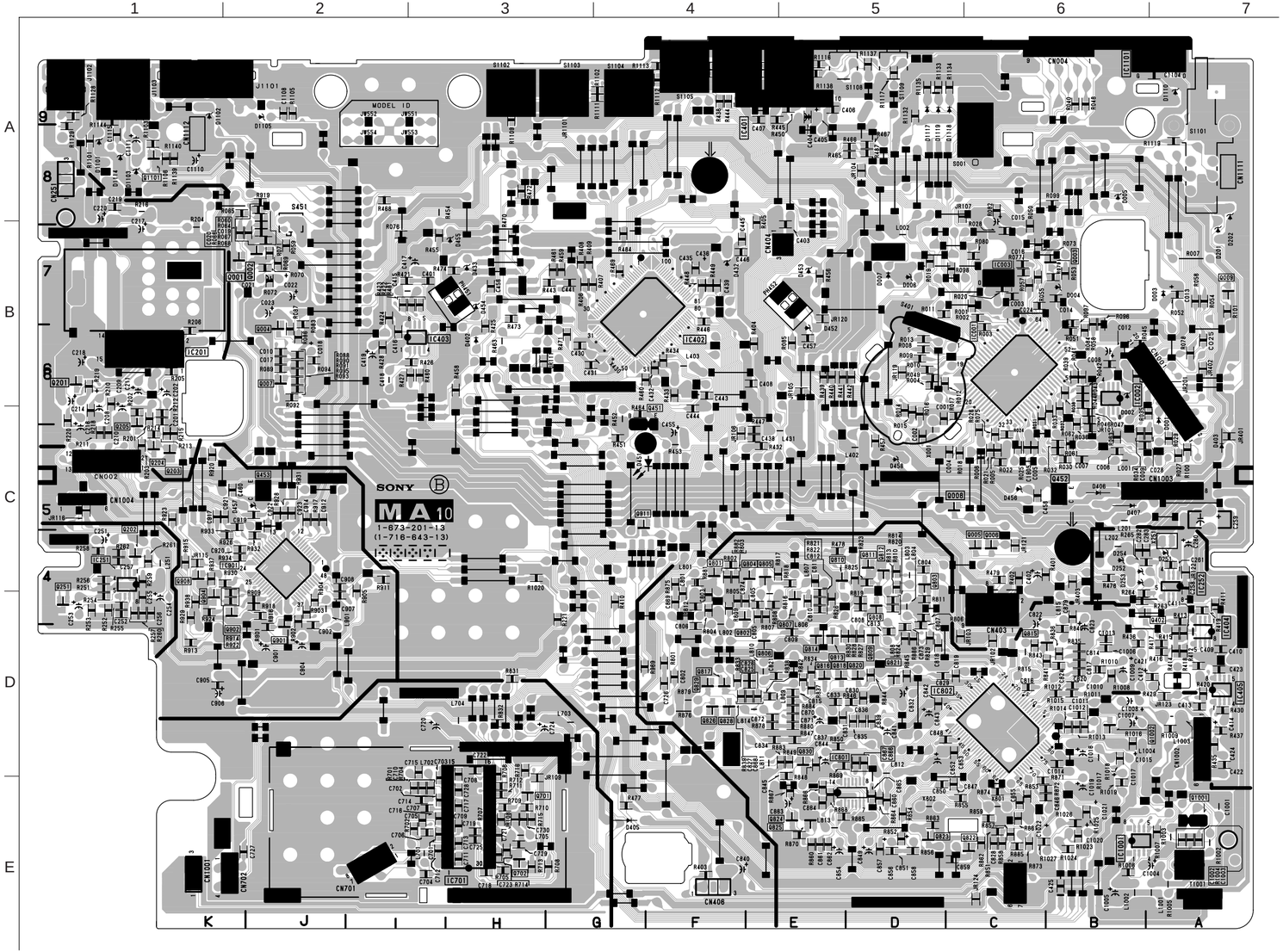
Ver.1.6

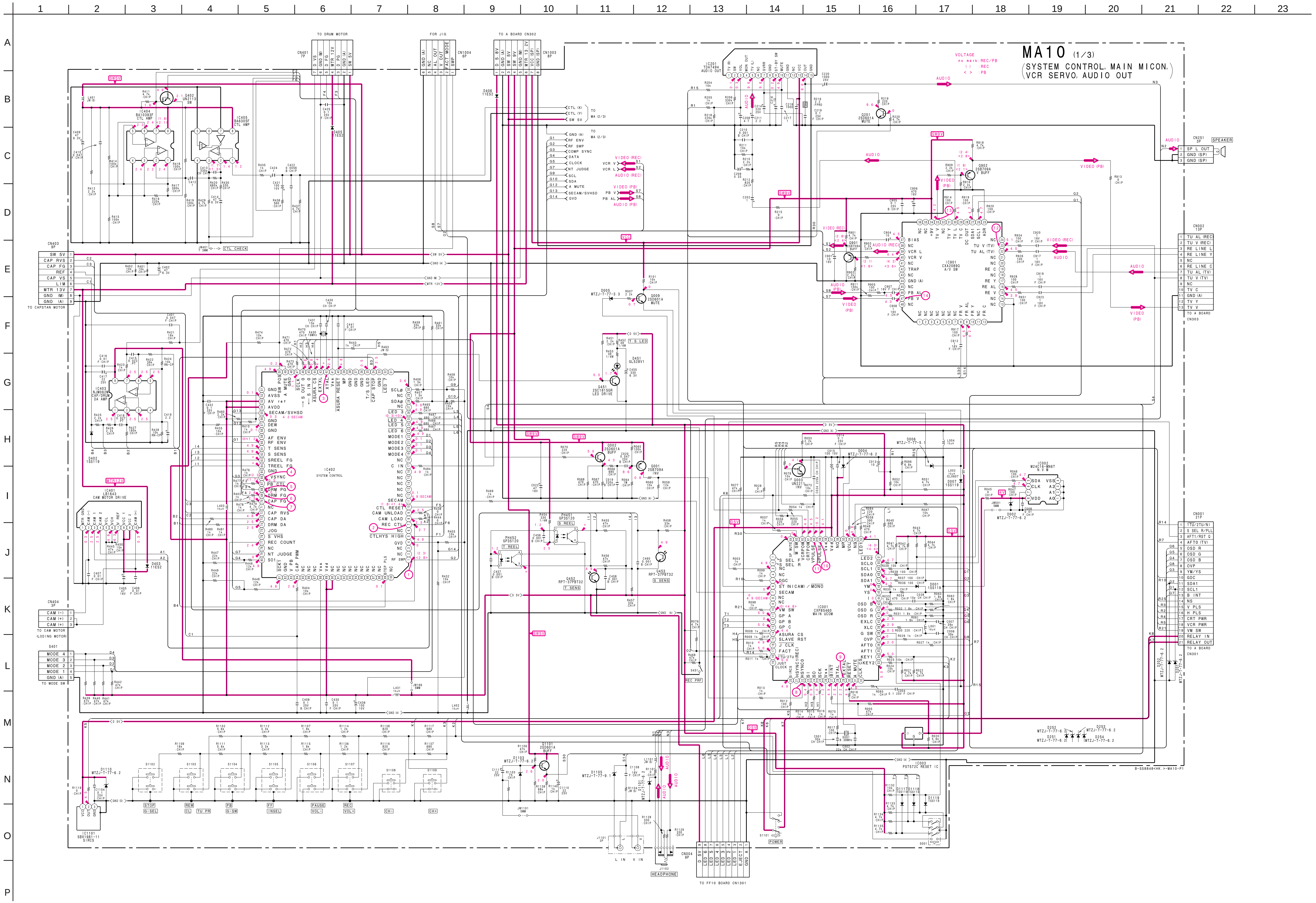
Note: The components identified by shading and mark B are critical for safety. Replace only with part nummber specified.

MA10 BOARD

IC		Q821	D-5	①
		Q823	E-5	①
IC001	B-6	Q824	E-5	①
IC002	C-6	Q825	E-5	①
IC003	B-6	Q830	D-5	①
IC201	B-1	Q901	D-2	①
IC401	A-4	Q902	D-2	①
IC402	B-4	Q1001	E-7	-
IC403	B-3	Q1002	D-6	①
IC404	D-7	Q1101	A-1	①
IC405	D-7	**DIODE**		
IC701	E-3			✻
IC801	E-5	D001	C-7	
IC802	D-6	D002	C-7	
IC901	C-2	D004	B-6	
IC1001	E-6	D005	A-6	
IC1101	A-7	D006	B-5	
TRANSISTOR		D007	B-5	
		D201	B-7	
	✻	D202	B-7	
Q001	B-2 ①	D251	C-7	
Q002	B-2 ①	D252	D-7	
Q003	B-6 ①	D253	D-7	
Q009	B-7 ①	D254	C-6	
Q201	B-1 ①	D402	B-3	
Q402	D-7 ①	D403	C-7	
Q451	C-4 -	D405	E-4	
Q452	C-6 -	D406	C-6	
Q453	C-2 -	D451	C-4	
Q701	E-3 ①	D1101	A-1	
Q801	C-4 ①	D1103	A-1	
Q803	D-5 ①	D1105	A-2	
Q808	D-5 ①	D1110	A-7	
Q809	D-5 ①	D1117	A-5	
Q812	D-5 ①	D1118	A-5	
Q815	D-6 ①	D1119	A-5	

– MA10 BOARD –

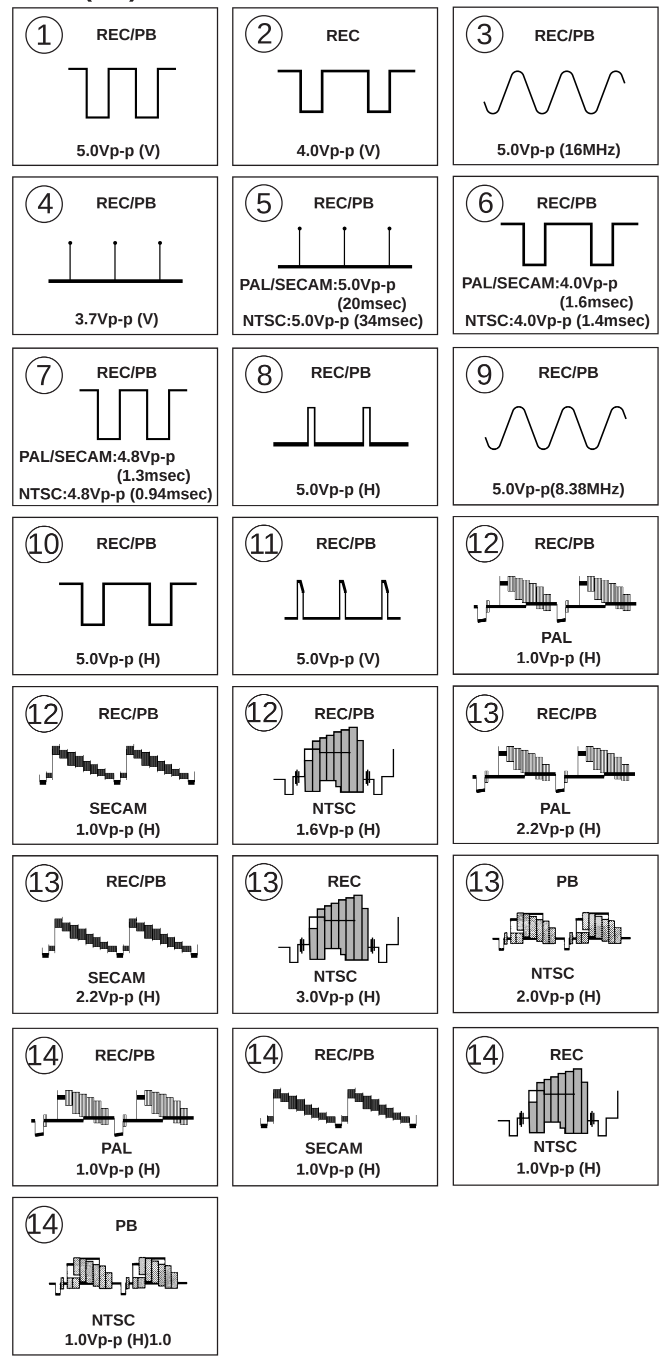




MA10 BOARD ⋆ mark LIST

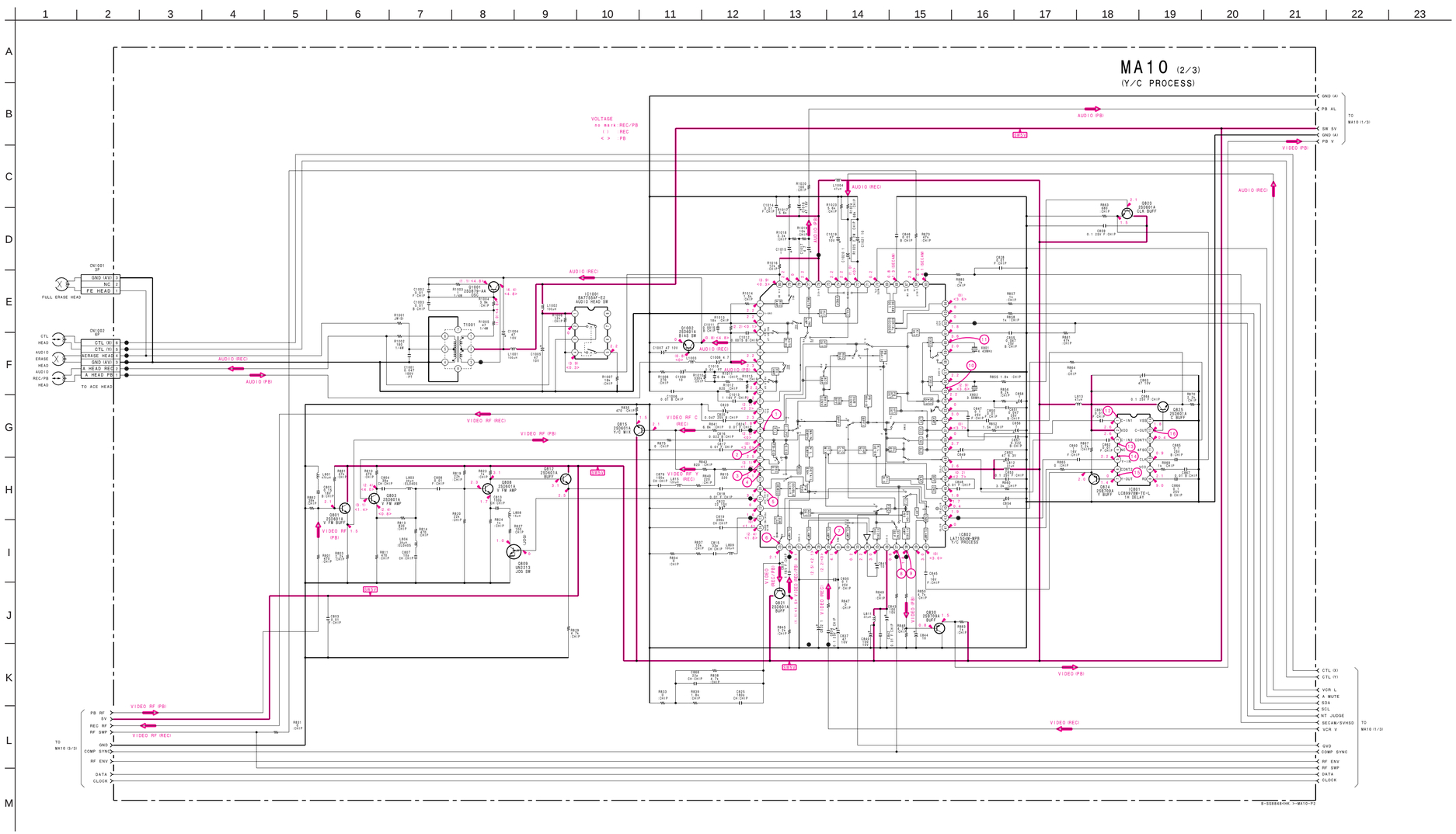
Ref No.	KV-VF21M77	KV-VF21M40/M70
IC402	CXP87852-061Q	CXP87852-062Q

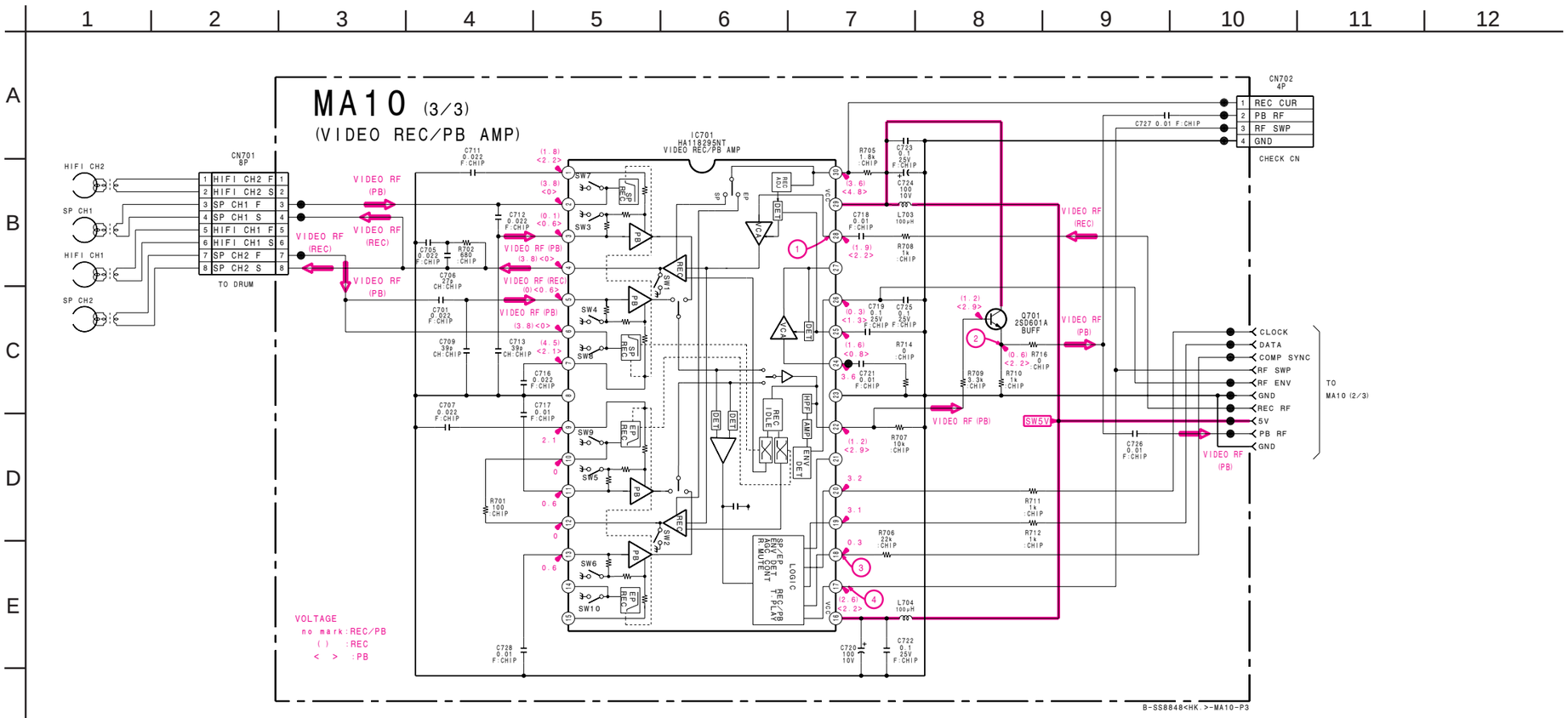
MA10(1/3) BOARD WAVEFORMS



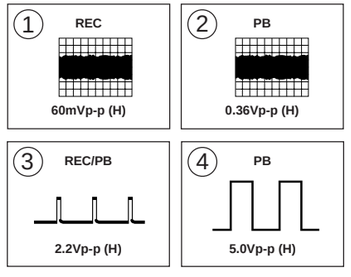
MA10(2/3) BOARD WAVEFORMS

① REC PAL/SECAM 0.4Vp-p (H)	① REC NTSC 0.4Vp-p (H)	② PB 0.32Vp-p (H)
③ PB 0.32Vp-p (H)	④ REC 0.24p-p (H)	⑤ PB 0.25Vp-p (H)
⑥ REC/PB PAL/SECAM 0.5Vp-p (H)	⑥ REC/PB NTSC 0.5Vp-p (H)	⑦ REC PAL 1.2Vp-p(H)
⑦ REC SECAM 1.2Vp-p (H)	⑦ REC NTSC 1.8Vp-p (V)	⑧ REC/PB 3.8Vp-p (H)
⑨ REC/PB PAL 2.4Vp-p (H)	⑨ REC/PB SECAM 2.4Vp-p (H)	⑨ REC NTSC 2.4Vp-p (H)
⑨ PB NTSC 2.0Vp-p (H)	⑩ REC/PB 0.58Vp-p (3.58MHz)	⑪ REC/PB 0.54Vp-p (4.43MHz)
⑫ PAL REC:0.4Vp-p(H) PB:0.3Vp-p(H)	⑫ SECAM REC:0.2Vp-p(H) PB:0.4Vp-p (H)	⑫ NTSC REC:0.5Vp-p(H) PB:0.2Vp-p (H)
⑬ PAL/SECAM REC:0.4Vp-p(H) PB:0.3Vp-p (H)	⑬ NTSC REC:0.5Vp-p(H) PB:0.2Vp-p (H)	⑭ REC/PB PAL/SECAM 0.4Vp-p(H)
⑭ REC/PB NTSC 0.4Vp-p (H)	⑮ REC/PB PAL/SECAM 0.4Vp-p (H)	⑮ REC/PB NTSC 0.4Vp-p (H)
⑯ PAL REC:0.46Vp-p(H) PB:0.3Vp-p (H)	⑯ SECAM REC:0.14Vp-p(H) PB:0.3Vp-p (H)	⑯ NTSC REC:0.5Vp-p(H) PB:0.2Vp-p (H)



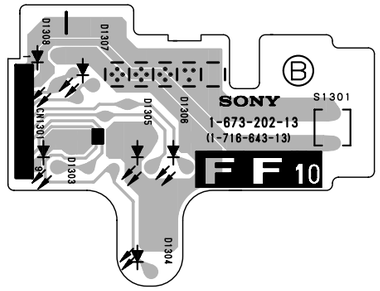


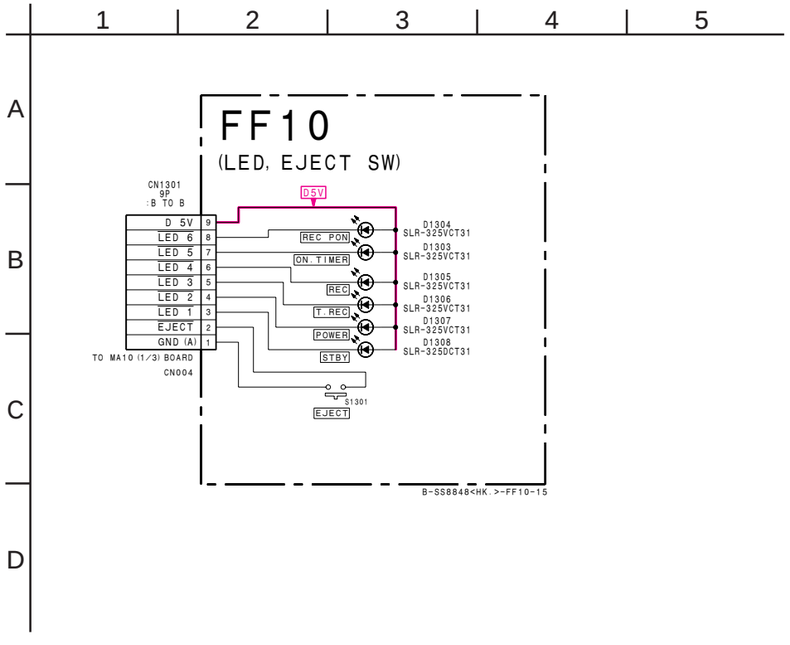
• MA10 (3/3) BOARD WAVEFORMS



FF10 [LED, EJECT SW]

– FF10 BOARD –





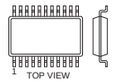
Schematic diagram

⬅ **MA10 (3/3) board**

5-4.SEMICONDUCTORS

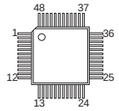
IC

BA10393F-E2
BA6305F-E2
BA7755AF-E2
M24C16-MN6T
NJM062M



8pin SOP

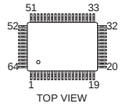
CXA2089Q



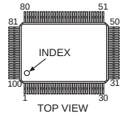
CXA2130S

48pin DIP

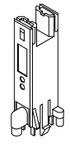
CXP85460



CXP87852



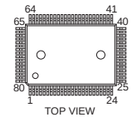
GP3S120



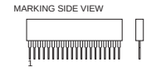
HA118295NT

30pin DIP

LA71504M-MPB

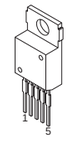


LA7840L

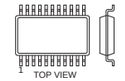


7pin SIP

LB1643



LC89978M-TE-L

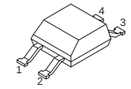


16pin SOP

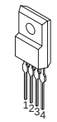
LM393N
M5216P

8pin DIP

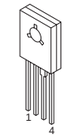
PC123F2
PC123FY2



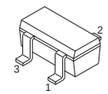
PQ05RD11
-PQ09RD11



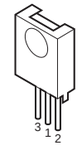
PQ30RV11



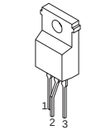
PST572C



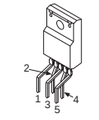
SBX1981



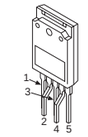
SE-135N



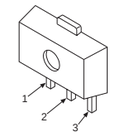
SI-3120C
SI-3120CA



STR-F6656



S-80743AL-A7



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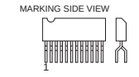
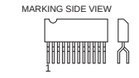


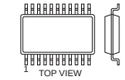
9pin ZIP

TDA7494



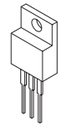
15pin ZIP

TK11819MTL



6pin SOP

µPC2406AHF

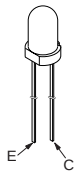


Schematic diagram

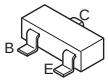
FF10 board ➡

TRANSISTOR

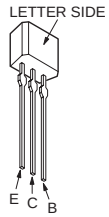
RPT-37PBT32
RPT-37PB3F



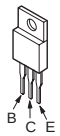
UN2113
UN2211
UN2213
2SA1162-G
2SB709A-QRS-TX
2SC1623-L5L6
2SC2412K-T-146-QR
2SD601A-Q
2SD601A-QRS-TX



2SA1175-HFE
2SA1309A-QRSTA
2SC2785-HFE
2SC3311A-QRSTA



2SA1837
2SC4793



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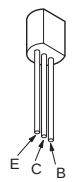
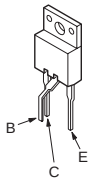
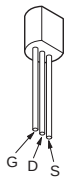
2SD879



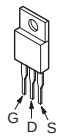
2SC5388



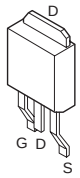
2SK1482-T



2SK2251-01

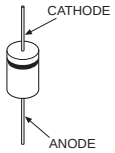


2SK2845-LB102

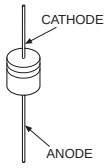


DIODE

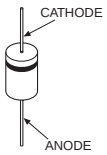
D1NL20U



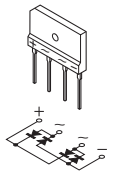
D1NS4
D1N20R
MTZJ-T-77-3.9B
MTZJ-3.3
MTZJ-5.1C
MTZJ-6.2B
RD10ESB2
RD18ES-B2
RD3.9ES-B1
RD3.9ES-B2
RD39ES-B2
RD5.1ES-B1
RD5.6ESB2
RD6.8ES-B2
1SS119-25
11ES2



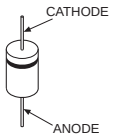
D1NS4-TR
D1NS6-TA2
D2L20U
EL1Z
EGP20G
EGP30DL-6085
ERA22-08
GP08D
GP08DPKG23
HSS83TD
MTZJ-T-77-10
MTZJ-T-77-18B
MTZJ-T-77-3.3
MTZJ-T-77-3.9A
MTZJ-T-77-39
MTZJ-T-77-5.1
MTZJ-T-77-5.1C
MTZJ-T-77-5.6
MTZJ-T-77-6.2
MTZJ-T-77-6.8A
MTZJ-T-77-9.1
MTZJ-T-77-9.1A
RGP10GPKG23
RGP15GPKG23



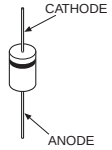
D6SB60LF



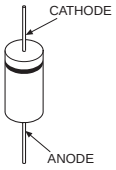
EGP30D



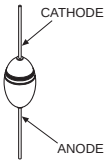
ERC04-06S
ERC06-15S
RU-1P



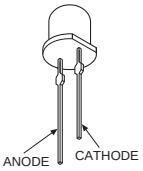
RU-4AM-T3



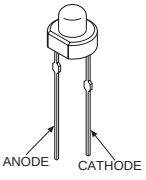
U05G



GL528V1



SLR-325DCT31
SLR-325VCT31



SECTION 6
EXPLODED VIEWS

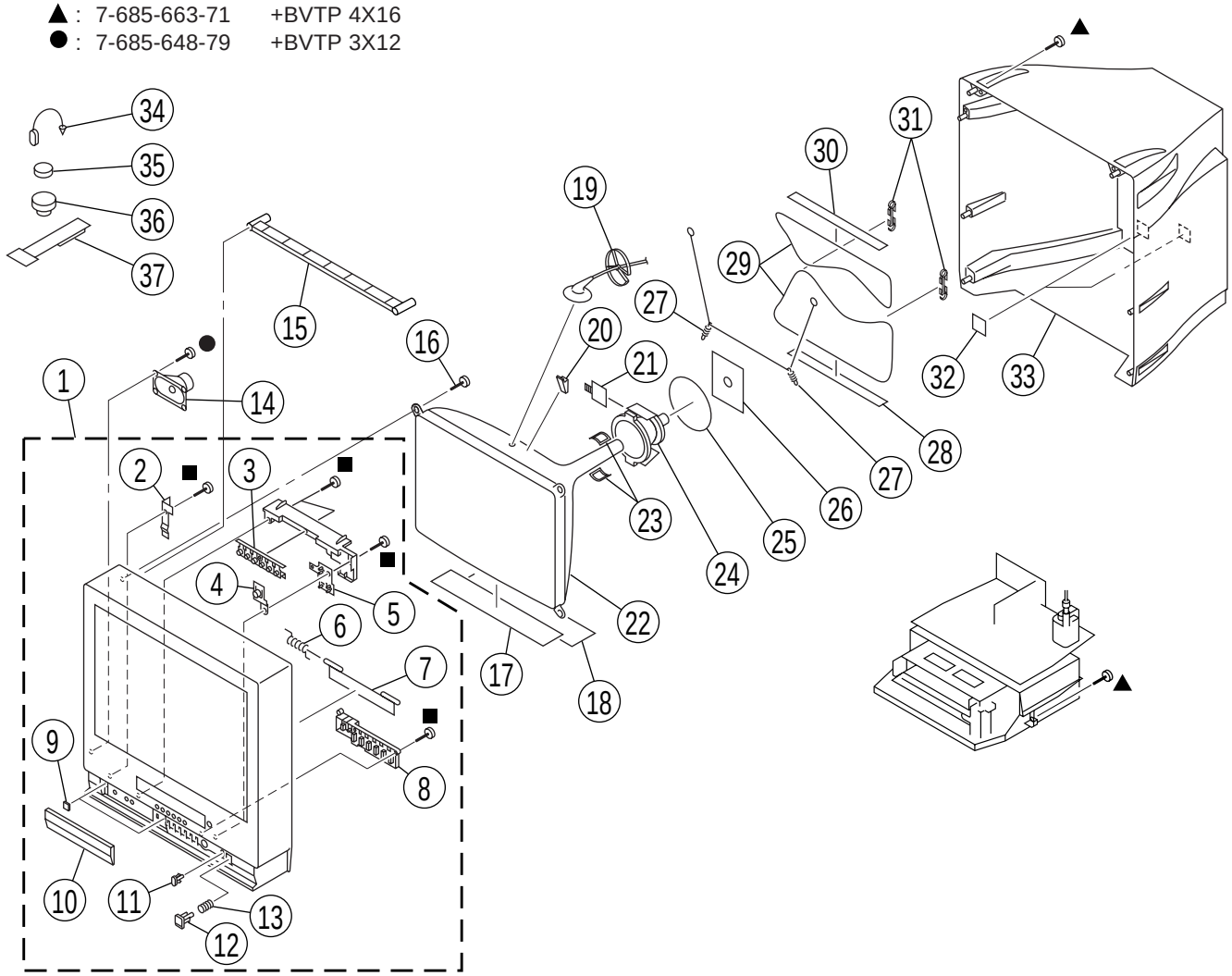
The components identified by shading and mark ⚠ are critical for safety.
Replace only with part number specified.

NOTE:

- Items with no part number and no description are not stocked because they are seldom required for routine service.
- The construction parts of an assembled part are indicated with a collation number in the remark column.
- Items marked " * " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

6-1. PICTURE TUBE

■ : 7-685-134-19 +PTP 2.6X8
▲ : 7-685-663-71 +BVTP 4X16
● : 7-685-648-79 +BVTP 3X12



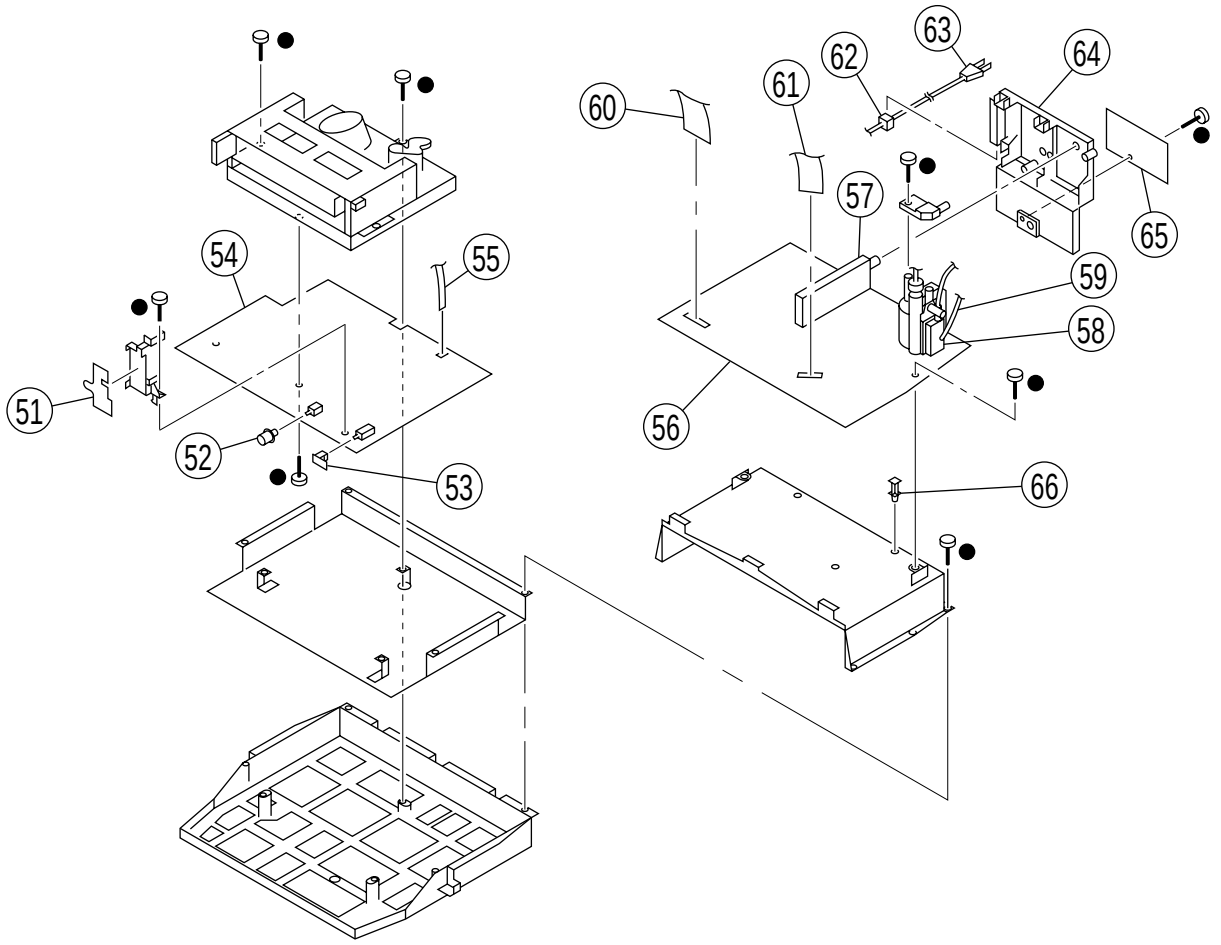
REF. NO.	PART NO.	DESCRIPTION	REMARK
1	X-4036-324-1	BEZNET ASSY (VF21M77)	2-13
1	X-4036-487-1	BEZNET ASSY (VF21M40/M70)	2-13
2	4-066-501-11	SPRING, DOOR	
3	4-066-493-11	BUTTON (A), FUNCTION	
4	4-066-626-11	BUTTON, EJECT	
5	4-066-495-11	GUIDE, LIGHT	
6	3-953-432-01	SPRING (GE), FL	
7	4-069-445-01	DOOR, CASSETTE (VF21M77)	
7	4-069-445-11	DOOR, CASSETTE (VF21M40/M70)	
8	4-066-494-11	BUTTON (B), FUNCTION	
9	4-068-502-11	CUSHION, DOOR	
10	X-4036-327-1	DOOR ASSY, CONTROL	
11	4-066-496-11	FILTER, REMOTE	
12	4-066-497-11	BUTTON, POWER	
13	4-042-593-21	SPRING, COMPRESSION	
14	1-529-394-11	SPEAKER (5X9CM)	
15	4-070-212-01	SUPPORT, TOP	
16	4-365-808-01	SCREW (5), TAPPING	
17	4-069-350-11	SHEET (B), BLOTTING	
18	4-069-452-11	SHEET (C), BLOTTING	

REF. NO.	PART NO.	DESCRIPTION	REMARK
19	* 3-704-372-11	HOLDER, HV CABLE	
20	4-046-600-11	SPACER, DY	
21	4-057-714-01	PIECE ASSY, TLH CORRECTION	
22	⚠ 8-738-809-05	PICTURE TUBE (A51LPT70X) (VF21M70/M77)	
22	⚠ 8-738-812-05	PICTURE TUBE (A51LPT70X) (VF21M40)	
23	⚠ 1-416-864-11	COIL, VM	
24	⚠ 8-451-505-11	DEFLECTION YOKE (Y21RSA-S)	
25	⚠ 1-452-728-21	COIL, NA ROTATION (RT-154)	
26	* A-1331-925-A	CV MOUNT	
27	4-369-318-61	SPRING, TENSION	
28	4-069-071-01	CUSHION (21), DGC	
29	⚠ 1-416-946-11	COIL, DEMAGNETIC	
30	4-069-468-01	CUSHION (UPPER), DGC	
31	4-064-883-11	HOLDER, DGC	
32	4-049-416-01	SHEET, BLIND	
33	4-066-491-11	COVER, REAR	
34	4-308-870-00	CLIP, LEAD WIRE	
35	1-452-032-00	MAGNET,DISK ; 10mmø	
36	1-452-094-00	MAGNET, ROTATABLE DISK ; 15mmø	
37	4-051-736-21	PIECE A(90), CONV. CORRECT	

6-2. CHASSIS

● : 7-685-648-79 +BVTP 3X12

The components identified by shading and mark ⚠ are critical for safety.
Replace only with part number specified.

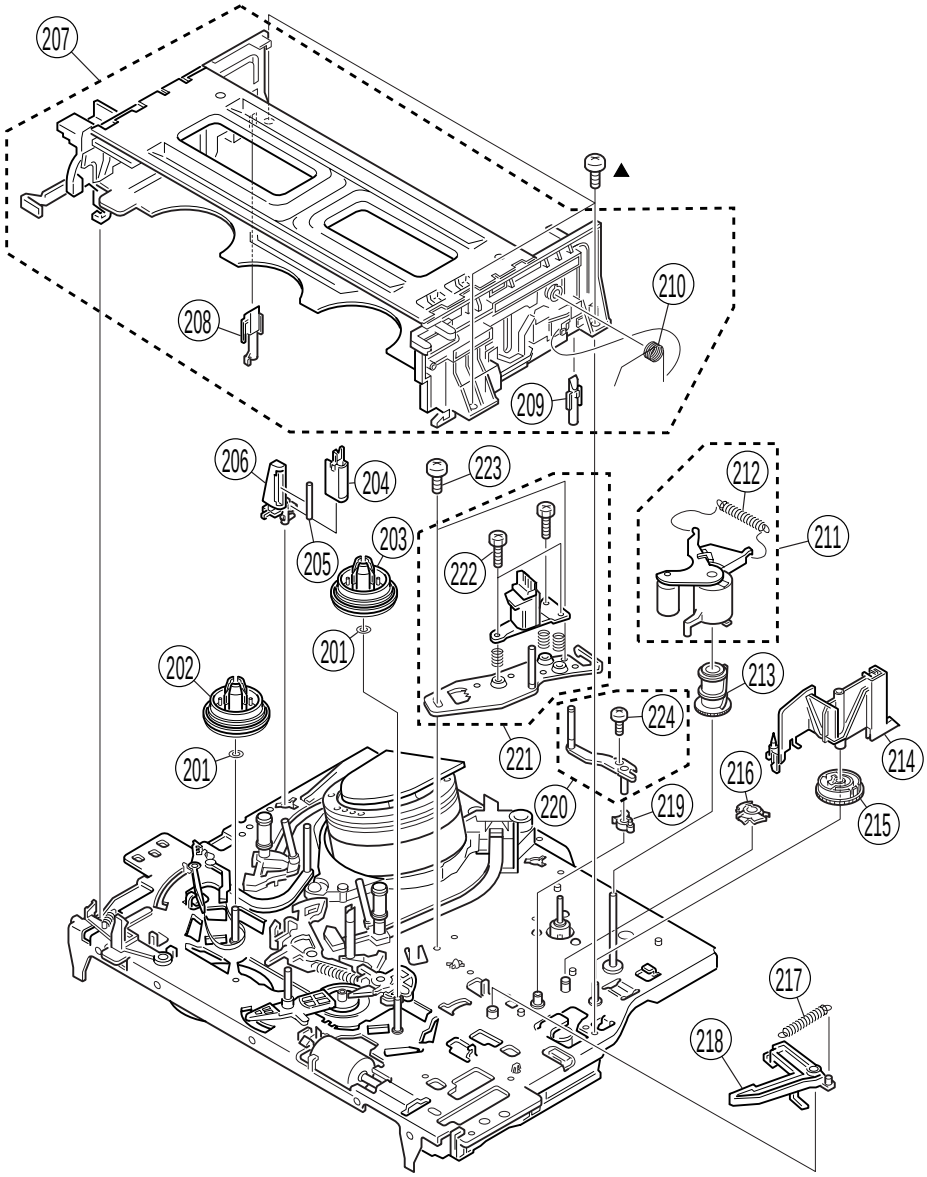


REF. NO.	PART NO.	DESCRIPTION	REMARK
51	* A-1241-368-A	FF10 MOUNT	
52	4-066-498-11	BUTTON, RECORDING	
53	4-394-972-01	CAP, POWER	
54	* A-1306-569-A	MA10 COMPL	
55	1-900-234-88	CONNECTOR ASSY 7P	
56	* A-1298-844-A	A COMPL	57,58
57	8-598-449-01	TUNER, FSS BTF-LG443 (VF21M40/M70)	
57	8-598-451-10	TUNER, FSS BTF-WG441 (VF21M77)	
58	⚠ 1-453-296-11	FBT ASSY (NX-4001/M3B4)	
59	1-900-226-67	LEAD ASSY, G2	

REF. NO.	PART NO.	DESCRIPTION	REMARK
60	1-900-244-71	CONNECTOR ASSY, FLAT 13P	
61	1-900-244-04	CONNECTOR ASSY , FLAT 21P	
62	4-022-115-00	HOLDER, AC CORD	
63	⚠ 1-574-062-22	CORD, POWER (WITH CONNECTOR)	(E/ME/JE model)
63	⚠ 1-769-609-21	CORD, POWER (WITH CONNECTOR)	(HK model)
64	4-069-720-01	TERMINAL PLATE (GA)	
65	* A-1241-367-A	F MOUNT	
66	* 4-046-677-11	HOLDER (B), PWB	

6-3. MECHANISM DECK ASSEMBLY (1)

▲ : 7-685-646-79 +BVTP 3X8

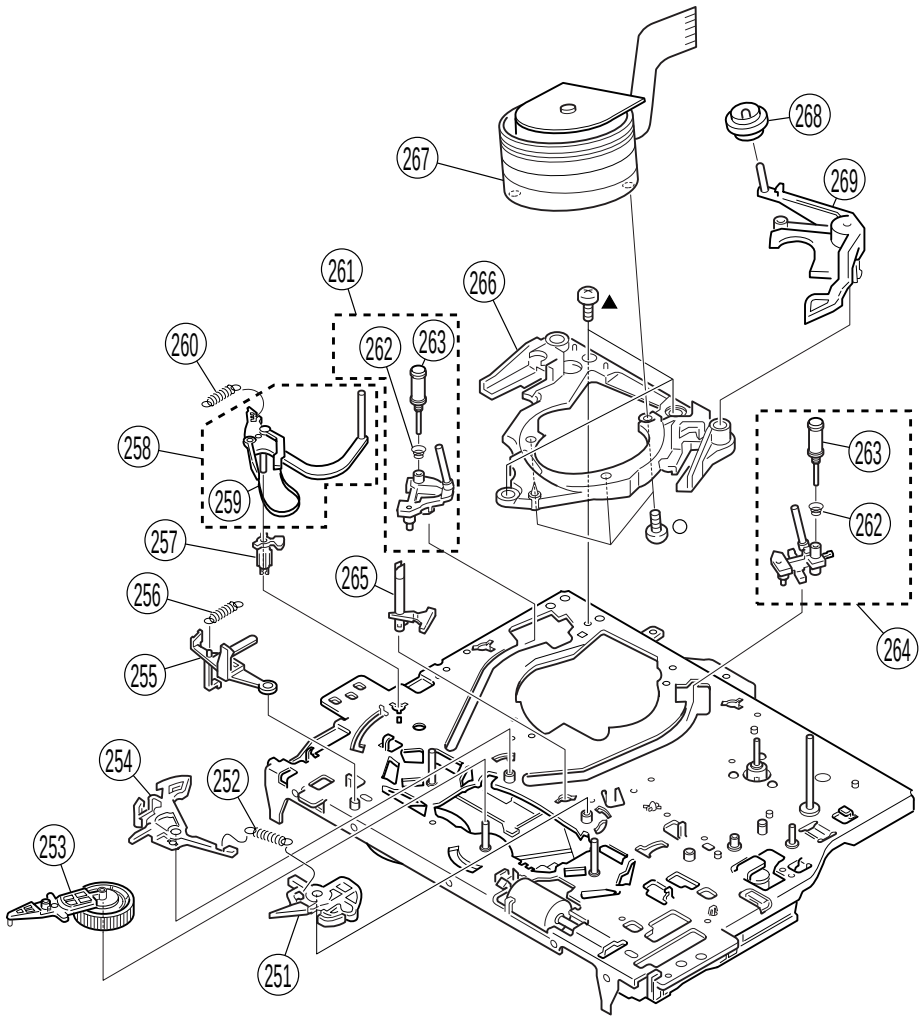


REF. NO.	PART NO.	DESCRIPTION	REMARK
201	3-977-509-01	WASHER, THRUST	
202	3-977-507-01	TABLE, REEL (S)	
203	3-977-508-01	TABLE, REEL (T)	
204	1-500-471-11	HEAD, FE	
205	3-977-495-01	SHAFT TG2	
206	3-977-494-01	HOLDER, FEH	
207	A-6759-619-B	FL COMPLETE ASSY	208-210
208	3-977-535-01	PLATE, LUMINOUS(END SENSOR)	
209	3-977-536-01	PLATE, LUMINOUS(TOP SENSOR)	
210	3-970-471-01	SPRING (DECK OPEN), TORSION	
211	A-6759-615-A	PRESS BLOCK ASSY, PINCH	212
212	3-958-455-01	SPRING (PINCH), TENSION	

REF. NO.	PART NO.	DESCRIPTION	REMARK
213	3-977-447-01	GEAR, ELEVATOR	
214	3-977-514-01	OPENER, LID	
215	3-977-441-01	GEAR, PINCH PRESSING	
216	3-977-445-01	GEAR, TG8 ARM DRIVING	
217	3-977-465-01	SPRING,EXTENSION(RVS BRAKE)	
218	X-3947-582-1	ARM ASSY, RVS BRAKE	
219	3-977-446-01	GEAR, TG8 ARM	
220	X-3947-590-1	TG8 ASSY	224
221	A-6759-620-A	HEAD BLOCK ASSY, ACE (TDK)	222
222	3-974-556-11	+ HEXA TT 2.6X9 (TAPER)	
223	3-979-508-01	SCREW +HEXA TP SW 3X8	
224	3-719-381-01	SCREW (M2X4)	

6-4. MECHANISM DECK ASSEMBLY (2)

▲ : 7-685-646-79 +BVTP 3X8
○ : 7-682-547-04 +P 3X6

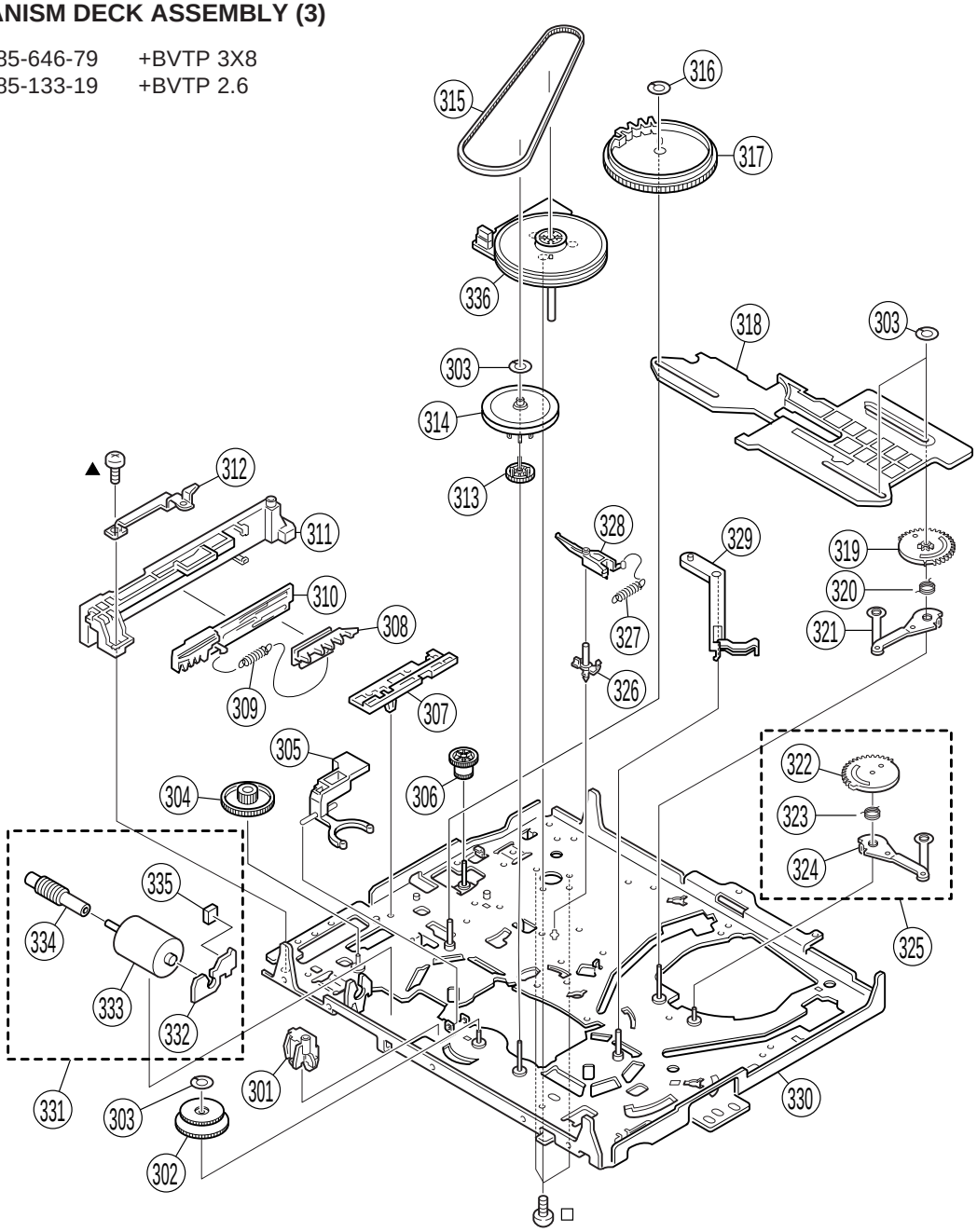


REF. NO.	PART NO.	DESCRIPTION	REMARK
251	X-3947-581-4	BRAKE ASSY,MAIN(T)	
252	3-977-462-01	SPRING,EXTENTION. (MAIN BRAKE)	
253	X-3947-573-1	ARM ASSY, PENDULUM	
254	X-3947-580-5	BRAKE ASSY, MAIN(S)	
255	3-977-513-02	LEVER, REC. PROOF	
256	3-976-767-01	SPRING, TENS. (REC. PROOF)	
257	3-977-487-01	BOSS, TG1 FULCRUM	
258	X-3947-587-1	TG1 ASSY	259
259	X-3947-589-1	BAND ASSY, TG1	
260	3-977-488-01	SPRING (POWER TENSION)	

REF. NO.	PART NO.	DESCRIPTION	REMARK
261	A-6750-324-A	SHUTTLE (S) BLOCK ASSY	262,263
262	3-965-178-01	SPRING	
263	X-3944-378-1	ROLLER ASSY, GUIDE	
264	A-6750-328-E	SHUTTLE (T) BLOCK ASSY	262,263
265	3-977-501-01	PLATE, LUMINOUS	
266	3-969-632-04	BASE, DRUM	
267	1-759-453-11	DRUM ASSY (DZH-89A-R)	
268	X-3947-255-1	ROLLER ASSY, HC	
269	3-975-724-07	ARM, HC	

6-5. MECHANISM DECK ASSEMBLY (3)

▲ : 7-685-646-79 +BVTP 3X8
□ : 7-685-133-19 +BVTP 2.6



REF. NO.	PART NO.	DESCRIPTION	REMARK
301	3-977-437-01	RETAINER,CAM MOTOR	
302	X-3947-584-1	ASSY, REEL DIRECT	
303	3-977-443-01	WASHER, STOPPER	
304	3-977-438-01	WORM - WHEEL	
305	3-977-506-01	ARM, LIMITTER SELECTION	
306	3-977-444-01	GEAR, PINCH TRANSMISSION	
307	3-977-515-01	GUIDE, FL SLIDER	
308	3-977-517-01	PLATE, SLIDE, FL	
309	3-977-519-01	SPRING, TENS. (LIMIT, FL)	
310	3-977-518-02	PLATE, LIMITTER, FL	
311	3-977-516-01	HOLDER, FL SLIDER	
312	3-977-877-01	PLATE, RETAINER	
313	3-977-504-01	GEAR, CLUTCH	
314	X-3947-585-1	GEAR ASSY, PULLEY	
315	3-977-510-01	BELT, RUBBER	
316	3-977-440-01	WASHER, STOPPER	
317	3-977-439-01	GEAR, CAM	
318	3-977-442-01	SLIDER	

REF. NO.	PART NO.	DESCRIPTION	REMARK
319	3-977-455-01	GEAR, LOADING(T)	
320	3-977-456-03	SPRING, TORSION (LOAD T)	
321	X-3947-579-1	LEVER ASSY, LOADING(T)	
322	3-977-451-01	GEAR, LOADING(S)	
323	3-977-452-01	SPRING, TORSION (LOAD S)	
324	X-3947-578-1	LEVER ASSY, LOADING(S)	
325	A-6759-616-A	GEAR BLOCK ASSY, LOADING(S)	322-324
326	3-977-468-01	SHAFT, CAPSTAN BRAKE	
327	3-977-467-02	SPRING, CAP BRAKE	
328	X-3947-583-1	BRAKE ASSY, CAPSTAN	
329	3-977-489-01	ARM, TG1 DRIVING	
330	X-3947-576-2	CHASSIS ASSY, MECHANICAL	
331	X-3947-577-1	MOTOR ASSY, CAM	332-335
332	1-666-524-11	PWB, CA-55	
333	1-541-309-11	MOTOR, L (RF-370C)	
334	3-977-436-01	WORM	
335	1-766-723-21	CONNECTOR, BOARD TO BOAR 3P	
336	1-698-971-11	MOTOR, DC	

SECTION 7
ELECTRICAL PARTS LIST

F A

NOTE:

The components identified by shading and mark ⚠ are critical for safety.
Replace only with part number specified.

- The components identified by ⋈ in this manual have been carefully factory-selected for each set in order to satisfy regulations regarding X-ray radiation. Should replacement be required, replace only with the value originally used.
- Items marked " * " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.

RESISTORS
- All resistors are in ohms
- F : nonflammable

When indicating parts by reference number, please include the board name.

- CAPACITORS
  PF : μμ F
- There are some cases the reference number on one board overlaps on the other board. Therefore, when ordering parts by the reference number, please include the board name.

TV BLOCK

REF. NO.	PART NO.	DESCRIPTION			REMARK
	* A-1241-367-A	F MOUNT			
		**********			
		<CAPACITOR>			
C901	⚠ 1-104-705-51	FILM	0.1MF	20%	250V
C902	⚠ 1-104-705-51	FILM	0.1MF	20%	250V
C903	⚠ 1-113-924-91	CERAMIC	0.0047MF	20%	250V
		<CONNECTOR>			
CN901	* 1-580-843-11	PIN, CONNECTOR (POWER)			
CN902	* 1-691-291-11	PIN, CONNECTOR (PC BOARD) 5P			
CN903	1-695-915-11	TAB (CONTACT)			
		<FUSE>			
F901	⚠ 1-532-299-00	FUSE, TIME-LAG 5A/250V			
	1-533-223-11	CLIP, FUSE ; F901			
		<RESISTOR>			
R901	⚠ 1-202-885-51	SOLID	1M	20%	1/2W
R902	⚠ 1-202-968-11	CEMENTED	1.2	5%	10W
		<TRANSFORMER>			
T901	⚠ 1-424-461-11	TRANSFORMER, LINE FILTER			
T902	⚠ 1-424-461-11	TRANSFORMER, LINE FILTER			
**********					
	* A-1298-844-A	A COMPL (VF21M77)			
		**********			
	* A-1298-845-A	A COMPL (VF21M40/M70)			
		**********			
	4-352-844-01	PIN, LEAD, COATING			
	4-382-854-01	SCREW (M3X8), P, SW (+)			
	4-382-854-11	SCREW (M3X10), P, SW (+)			
	7-685-648-79	SCREW +BVTP 3X12 TYPE2 IT-3			
		<CAPACITOR>			
C102	1-126-933-11	ELECT	100MF	20%	16V
C104	1-126-933-11	ELECT	100MF	20%	16V
C106	1-126-933-11	ELECT	100MF	20%	16V
C108	1-104-664-11	ELECT	47MF	20%	25V
C110	1-104-664-11	ELECT	47MF	20%	25V
C111	1-124-234-00	ELECT	22MF	20%	16V
C113	1-126-964-11	ELECT	10MF	20%	50V
C114	1-124-234-00	ELECT	22MF	20%	16V
C117	1-104-664-11	ELECT	47MF	20%	25V
C118	1-163-038-91	CERAMIC CHIP	0.1MF		25V

REF. NO.	PART NO.	DESCRIPTION			REMARK
C119	1-126-964-11	ELECT	10MF	20%	50V
C301	1-126-963-11	ELECT	4.7MF	20%	50V
C302	1-163-233-11	CERAMIC CHIP	18PF	5%	50V
C304	1-163-233-11	CERAMIC CHIP	18PF	5%	50V
C306	1-163-259-91	CERAMIC CHIP	220PF	5%	50V
C307	1-126-957-11	ELECT	0.22MF	20%	50V
C308	1-107-823-11	CERAMIC CHIP	0.47MF	10%	16V
C309	1-126-162-11	ELECT	3.3MF	20%	50V
C310	1-126-964-11	ELECT	10MF	20%	50V
C311	1-104-664-11	ELECT	47MF	20%	25V
C312	1-126-963-11	ELECT	4.7MF	20%	50V
C313	1-115-339-11	CERAMIC CHIP	0.1MF	10%	50V
C314	1-107-714-11	ELECT	10MF	20%	16V
C315	1-104-664-11	ELECT	47MF	20%	25V
C316	1-104-664-11	ELECT	47MF	20%	25V
C317	1-126-964-11	ELECT	10MF	20%	50V
C318	1-104-665-11	ELECT	100MF	20%	25V
C319	1-163-038-91	CERAMIC CHIP	0.1MF		25V
C320	1-163-031-11	CERAMIC CHIP	0.01MF		50V
C321	1-163-038-91	CERAMIC CHIP	0.1MF		25V
C322	1-163-031-11	CERAMIC CHIP	0.01MF		50V
C323	1-163-031-11	CERAMIC CHIP	0.01MF		50V
C325	1-104-664-11	ELECT	47MF	20%	25V
C326	1-126-960-11	ELECT	1MF	20%	50V
C327	1-163-017-00	CERAMIC CHIP	0.0047MF	10%	50V
C328	1-107-714-11	ELECT	10MF	20%	16V
C329	1-163-113-00	CERAMIC CHIP	68PF	5%	50V
C330	1-104-665-11	ELECT	100MF	20%	25V
C331	1-102-114-00	CERAMIC	470PF	10%	50V
C338	1-104-665-11	ELECT	100MF	20%	25V
C339	1-163-038-91	CERAMIC CHIP	0.1MF		25V
C501	1-126-934-11	ELECT	220MF	20%	16V
C502	1-126-960-11	ELECT	1MF	20%	50V
C503	1-163-021-91	CERAMIC CHIP	0.01MF	10%	50V
C504	1-107-910-11	ELECT	100MF	20%	50V
C505	1-115-339-11	CERAMIC CHIP	0.1MF	10%	50V
C507	1-107-910-11	ELECT	100MF	20%	50V
C508	1-106-220-00	MYLAR	0.1MF	10%	100V
C509	1-137-194-81	FILM	0.47MF	5%	50V
C510	1-163-031-11	CERAMIC CHIP	0.01MF		50V
C513	1-126-941-11	ELECT	470MF	20%	25V
C514	1-163-031-11	CERAMIC CHIP	0.01MF		50V
C515	1-107-652-11	ELECT	10MF	20%	250V
C601	1-104-664-11	ELECT	47MF	20%	25V
C602	⚠ 1-113-903-11	CERAMIC	0.001MF	20%	250V
C603	⚠ 1-113-903-11	CERAMIC	0.001MF	20%	250V
C604	⚠ 1-113-903-11	CERAMIC	0.001MF	20%	250V
C605	1-125-906-11	ELECT	560MF	20%	450V
C606	1-104-760-11	CERAMIC CHIP	0.047MF	10%	50V
C607	⚠ 1-113-903-11	CERAMIC	0.001MF	20%	250V
C608	1-126-942-61	ELECT	1000MF	20%	25V
C609	1-104-664-11	ELECT	47MF	20%	25V
C610	1-104-664-11	ELECT	47MF	20%	25V
C611	1-104-331-11	CERAMIC	0.0022MF	10%	1KV

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The components identified by shading and mark ⚠ are critical for safety.
Replace only with part number specified.

REF. NO.	PART NO.	DESCRIPTION			REMARK
C612	1-126-943-11	ELECT	2200MF	20%	25V
⋈C614	⚠ 1-126-964-11	ELECT	10MF	20%	50V
C615	1-126-960-11	ELECT	1MF	20%	50V
C616	1-107-680-91	ELECT	22MF	20%	450V
C617	1-104-664-11	ELECT	47MF	20%	25V
C618	1-163-007-11	CERAMIC CHIP	680PF	10%	50V
C619	1-162-318-11	CERAMIC	0.001MF	10%	500V
C620	1-126-941-11	ELECT	470MF	20%	25V
C621	1-104-664-11	ELECT	47MF	20%	25V
C622	1-104-664-11	ELECT	47MF	20%	25V
C623	1-126-969-11	ELECT	220MF	20%	50V
C624	1-162-318-11	CERAMIC	0.001MF	10%	500V
C625	1-126-972-11	ELECT	1000MF	20%	50V
C626	1-126-944-21	ELECT	3300MF	20%	25V
C627	1-162-318-11	CERAMIC	0.001MF	10%	500V
C628	1-163-133-00	CERAMIC CHIP	470PF	5%	50V
C630	1-125-978-91	CERAMIC	2200PF	10%	1KV
C631	1-163-275-11	CERAMIC CHIP	0.001MF	5%	50V
C632	1-124-347-00	ELECT	100MF	20%	160V
C634	1-163-009-11	CERAMIC CHIP	0.001MF	10%	50V
C635	1-102-050-00	CERAMIC	0.01MF		500V
C636	1-163-005-11	CERAMIC CHIP	470PF	10%	50V
C638	1-109-880-11	FILM	0.0015MF	3%	2KV
C639	1-163-017-00	CERAMIC CHIP	0.0047MF	10%	50V
C640	1-163-001-11	CERAMIC CHIP	220PF	10%	50V
C641	1-102-114-00	CERAMIC	470PF	10%	50V
C642	1-136-601-11	FILM	0.01MF	5%	630V
C643	1-113-903-11	CERAMIC	0.001MF	20%	250V
C644	1-163-005-11	CERAMIC CHIP	470PF	10%	50V
C645	1-104-664-11	ELECT	47MF	20%	25V
C646	1-126-943-11	ELECT	2200MF	20%	25V
C647	1-126-965-11	ELECT	22MF	20%	50V
C648	1-164-004-11	CERAMIC CHIP	0.1MF	10%	25V
C650	1-137-605-11	FILM	0.01MF	10%	250V
C651	1-163-275-11	CERAMIC CHIP	0.001MF	5%	50V
C655	1-126-941-11	ELECT	470MF	20%	25V
C657	1-104-664-11	ELECT	47MF	20%	25V
C658	1-104-331-11	CERAMIC	0.0022MF	10%	1KV
C659	1-104-705-11	FILM	0.1MF	20%	250V
C660	1-104-666-11	ELECT	220MF	20%	25V
C661	1-163-275-11	CERAMIC CHIP	0.001MF	5%	50V
C662	1-104-665-11	ELECT	100MF	20%	25V
C663	1-104-665-11	ELECT	100MF	20%	25V
C664	1-104-665-11	ELECT	100MF	20%	25V
C665	1-104-665-11	ELECT	100MF	20%	25V
C801	1-137-417-11	MYLAR	0.0047MF	10%	200V
C802	1-126-941-11	ELECT	470MF	20%	25V
C803	1-117-669-71	FILM	0.68MF	5%	250V
C804	1-104-664-11	ELECT	47MF	20%	25V
C805	1-123-024-21	ELECT	33MF		160V
C806	1-102-228-00	CERAMIC	470PF	10%	500V
C807	1-107-957-11	ELECT	1MF	20%	250V
C808	1-163-275-11	CERAMIC CHIP	0.001MF	5%	50V
C809	1-163-038-91	CERAMIC CHIP	0.1MF		25V
C810	1-161-830-00	CERAMIC	0.0047MF		500V
C812	1-107-366-11	FILM	0.022MF	10%	200V
C813	1-163-031-11	CERAMIC CHIP	0.01MF		50V
C814	1-163-021-91	CERAMIC CHIP	0.01MF	10%	50V
C816	1-102-114-00	CERAMIC	470PF	10%	50V
C818	1-104-664-11	ELECT	47MF	20%	25V
C819	1-115-521-11	FILM	0.82MF	5%	250V
C820	1-106-383-00	MYLAR	0.047MF	10%	200V
C821	⚠ 1-162-135-11	CERAMIC	560PF	10%	2KV
C823	1-162-131-11	CERAMIC	220PF	10%	2KV
C824	⚠ 1-117-644-21	FILM	0.01MF	3%	1.2KV
C825	1-107-492-11	ELECT	47MF	20%	160V
C826	1-137-417-11	MYLAR	0.0047MF	10%	200V
C827	⚠ 1-129-722-00	FILM	0.047MF	5%	630V
C828	1-126-960-11	ELECT	1MF	20%	50V

REF. NO.	PART NO.	DESCRIPTION	REMARK
		<CONNECTOR>	
CN301	1-569-937-11	SOCKET, CONNECTOR 21P	
CN302	* 1-564-511-11	PLUG, CONNECTOR 8P	
CN303	* 1-569-930-11	SOCKET, CONNECTOR 13P	
CN304	* 1-560-127-00	PLUG, CONNECTOR (2.5MM) 7P	
CN305	* 1-564-510-11	PLUG, CONNECTOR 7P	
CN306	* 1-564-509-11	PLUG, CONNECTOR 6P	
CN601	* 1-691-291-11	PIN, CONNECTOR (PC BOARD) 5P	
CN602	* 1-508-786-00	PIN, CONNECTOR (5mm PITCH) 2P	
CN603	* 1-573-963-11	PIN, CONNECTOR (PC BOARD) 3P	
CN604	1-695-915-11	TAB (CONTACT)	
CN605	* 1-564-508-11	PLUG, CONNECTOR 5P	
CN801	* 1-580-798-11	CONNECTOR PIN (DY) 6P	
CN803	* 1-564-508-11	PLUG, CONNECTOR 5P	
		<DIODE>	
D101	8-719-923-60	DIODE MTZJ-T-77-9.1A	
D102	8-719-923-60	DIODE MTZJ-T-77-9.1A	
D103	8-719-911-19	DIODE 1SS119-25 (VF21M77)	
D301	8-719-109-89	DIODE RD5.6ESB2	
D302	8-719-109-89	DIODE RD5.6ESB2	
D304	8-719-923-60	DIODE MTZJ-T-77-9.1A	
D305	8-719-911-19	DIODE 1SS119-25	
D307	8-719-911-19	DIODE 1SS119-25	
D308	8-719-109-72	DIODE RD3.9ESB2	
D501	8-719-110-49	DIODE RD18ESB2	
D502	8-719-109-89	DIODE RD5.6ESB2	
D503	8-719-908-03	DIODE GP08D	
D506	8-719-302-43	DIODE EL1Z	
D507	8-719-302-43	DIODE EL1Z	
D601	⚠ 8-719-018-79	DIODE D6SB60LF	
D602	8-719-911-55	DIODE U05G	
D603	8-719-109-97	DIODE RD6.8ESB2	
D604	8-719-911-55	DIODE U05G	
D605	8-719-979-50	DIODE EGP30D	
D606	8-719-063-73	DIODE D1NL20U-TR	
D607	8-719-911-19	DIODE 1SS119-25	
D608	8-719-110-49	DIODE RD18ESB2	
D609	8-719-028-45	DIODE D2L20U	
D610	8-719-028-45	DIODE D2L20U	
D611	8-719-911-55	DIODE U05G	
D612	8-719-312-10	DIODE RU4AM-T3	
D613	8-719-109-97	DIODE RD6.8ESB2	
D614	8-719-911-19	DIODE 1SS119-25	
D615	8-719-911-19	DIODE 1SS119-25	
D616	8-719-911-19	DIODE 1SS119-25	
D617	8-719-311-31	DIODE RU-1P	
D618	8-719-063-73	DIODE D1NL20U-TR	
D619	8-719-510-02	DIODE D1NS4	
D620	8-719-063-73	DIODE D1NL20U-TR	
D621	8-719-510-48	DIODE D1N20R	
D622	8-719-911-19	DIODE 1SS119-25	
D623	8-719-110-17	DIODE RD10ESB2	
D624	8-719-109-97	DIODE RD6.8ESB2	
D625	8-719-510-73	DIODE S3L20UF4	
D626	8-719-948-45	DIODE ERA22-08	
D627	8-719-032-12	DIODE D1NS6	
D628	8-719-911-19	DIODE 1SS119-25	
D629	8-719-911-19	DIODE 1SS119-25	
D630	8-719-110-53	DIODE RD20ESB2	
D631	8-719-911-19	DIODE 1SS119-25	
D632	8-719-911-19	DIODE 1SS119-25	
D633	8-719-911-19	DIODE 1SS119-25	
D634	8-719-110-88	DIODE RD39ESB2	
D801	8-719-302-43	DIODE EL1Z	
D802	8-719-911-19	DIODE 1SS119-25	
D803	8-719-302-43	DIODE EL1Z	
D804	8-719-908-03	DIODE GP08D	

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REF. NO.	PART NO.	DESCRIPTION	REMARK
D805	8-719-921-44	DIODE MTZJ-5.1C	
D806	8-719-911-19	DIODE 1SS119-25	
D807	8-719-908-03	DIODE GP08D	
D810	8-719-945-80	DIODE ERC06-15S	
D811	8-719-979-85	DIODE EGP20G	
		<FERRITE BEAD>	
FB101	1-410-397-21	FERRITE 1.1UH	
FB102	1-410-397-21	FERRITE 1.1UH	
FB601	1-410-397-21	FERRITE 1.1UH	
FB602	1-410-397-21	FERRITE 1.1UH	
FB603	1-410-397-21	FERRITE 1.1UH	
FB606	1-410-397-21	FERRITE 1.1UH	
FB608	1-410-397-21	FERRITE 1.1UH	
FB609	1-410-397-21	FERRITE 1.1UH	
FB610	1-410-397-21	FERRITE 1.1UH	
FB612	1-412-911-11	FERRITE 0UH	
FB620	1-410-397-21	FERRITE 1.1UH	
		<IC>	
IC101	8-759-042-02	IC S-80743AL-A7-S (VF21M77)	
IC103	8-749-925-00	IC TK11819MTL	
IC301	8-752-088-39	IC CXA2130S	
IC501	8-759-444-83	IC LA7840L	
IC601	8-759-471-81	IC PQ05RD11	
IC602	8-759-459-99	IC PQ09RD11	
IC603	8-759-390-48	IC uPC2406AHF	
IC604	8-759-098-24	IC PQ30RV11	
IC605	8-749-921-21	IC SI-3120C	
IC606	⚠ 8-749-014-48	IC STR-F6656	
⋈IC607	⚠ 8-749-920-61	IC SE-135N	
IC608	8-759-459-99	IC PQ09RD11	
IC801	8-759-729-03	IC NJM2903D	
		<JACK>	
J101	1-779-204-11	JACK, PIN 2P (GAME/INPUT)	
		<COIL>	
L101	1-414-856-11	INDUCTOR 10UH	
L102	1-414-856-11	INDUCTOR 10UH	
L103	1-414-856-11	INDUCTOR 10UH	
L104	1-414-856-11	INDUCTOR 10UH	
L105	1-414-856-11	INDUCTOR 10UH	
L106	1-414-856-11	INDUCTOR 10UH	
L107	1-410-444-11	INDUCTOR 1.2mH	
L108	1-414-856-11	INDUCTOR 10UH	
L302	1-414-856-11	INDUCTOR 10UH	
L303	1-414-856-11	INDUCTOR 10UH	
L501	1-412-533-21	INDUCTOR 47UH	
L601	1-412-525-31	INDUCTOR 10UH	
L602	1-412-533-21	INDUCTOR 47UH	
L603	1-412-541-41	INDUCTOR 220UH	
L604	1-406-983-11	INDUCTOR 1mH	
L605	1-412-534-31	INDUCTOR 56UH	
L801	1-412-527-11	INDUCTOR 15UH	
L803	1-406-677-11	INDUCTOR 10mH	
L804	1-414-493-41	INDUCTOR 4.7mH	
L805	1-459-111-00	INDUCTOR 10mH	
L807	1-414-187-11	INDUCTOR 47UH	
L808	1-406-981-21	INDUCTOR 470UH	
L809	1-469-013-31	INDUCTOR 18UH	
		<PHOTO COUPLER>	
PH601	⚠ 8-749-010-64	PHOTO COUPLER PC123FY2	

REF. NO.	PART NO.	DESCRIPTION	REMARK
		<MODULE>	
⋈PM601	⚠ 1-809-054-71	MODULE, PROTECTOR PM-21	
		<IC LINK>	
PS601	⚠ 1-532-686-21	LINK, IC 2.7A/150V	
PS602	⚠ 1-532-686-21	LINK, IC 2.7A/150V	
PS603	⚠ 1-532-686-21	LINK, IC 2.7A/150V	
PS604	⚠ 1-532-686-21	LINK, IC 2.7A/150V	
		<TRANSISTOR>	
Q101	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q102	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q103	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q301	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q302	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q303	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q304	8-729-422-27	TRANSISTOR 2SD601A-Q	
Q305	8-729-216-22	TRANSISTOR 2SA1162-G	
Q501	8-729-421-22	TRANSISTOR UN2211	
Q502	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q503	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q601	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q602	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q604	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q605	8-729-044-30	TRANSISTOR 2SK2845-LB102	
Q606	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q607	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q608	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q609	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q610	8-729-120-28	TRANSISTOR 2SC1623-L5L6	
Q801	8-729-038-82	TRANSISTOR 2SK2251-01	
Q802	8-729-047-13	TRANSISTOR 2SC5388	
Q803	8-729-040-55	TRANSISTOR 2SK1482-T	
		<RESISTOR>	
R101	1-216-025-91	RES,CHIP 100 5% 1/10W	
R102	1-216-025-91	RES,CHIP 100 5% 1/10W	
R103	1-216-121-91	RES,CHIP 1M 5% 1/10W	
R104	1-216-025-91	RES,CHIP 100 5% 1/10W	
R105	1-216-025-91	RES,CHIP 100 5% 1/10W	
R106	1-216-025-91	RES,CHIP 100 5% 1/10W	
R107	1-216-025-91	RES,CHIP 100 5% 1/10W	
R108	1-216-022-00	RES,CHIP 75 5% 1/10W	
R109	1-216-081-00	RES,CHIP 22K 5% 1/10W	
R110	1-216-081-00	RES,CHIP 22K 5% 1/10W	
R111	1-216-295-91	SHORT 0	
R112	1-216-057-00	RES,CHIP 2.2K 5% 1/10W	
R113	1-216-049-91	RES,CHIP 1K 5% 1/10W	
R114	1-216-089-91	RES,CHIP 47K 5% 1/10W	
R115	1-216-093-91	RES,CHIP 68K 5% 1/10W	
R116	1-216-065-91	RES,CHIP 4.7K 5% 1/10W	
R117	1-216-065-91	RES,CHIP 4.7K 5% 1/10W	
R118	1-216-295-91	SHORT 0 (VF21M40/M70)	
R123	1-216-049-91	RES,CHIP 1K 5% 1/10W	
R124	1-216-097-91	RES,CHIP 100K 5% 1/10W	
R125	1-216-295-91	SHORT 0 (VF21M77)	
R126	1-216-051-00	RES,CHIP 1.2K 5% 1/10W	
R127	1-216-049-91	RES,CHIP 1K 5% 1/10W	
R301	1-216-057-00	RES,CHIP 2.2K 5% 1/10W	
R303	1-216-073-00	RES,CHIP 10K 5% 1/10W	
R304	1-216-025-91	RES,CHIP 100 5% 1/10W	
R306	1-216-025-91	RES,CHIP 100 5% 1/10W	
R307	1-216-121-91	RES,CHIP 1M 5% 1/10W	
R308	1-216-025-91	RES,CHIP 100 5% 1/10W	
R309	1-216-081-00	RES,CHIP 22K 5% 1/10W	
R311	1-216-025-91	RES,CHIP 100 5% 1/10W	

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• The components identified by ⋈ in this manual have been carefully factory-selected for each set in order to satisfy regulations regarding X-ray radiation. Should replacement be required, replace only with the value originally used.

The components identified by shading and mark ⚠ are critical for safety.
Replace only with part number specified.

REF. NO.		PART NO.	DESCRIPTION			REMARK
R312		1-216-675-11	METAL CHIP	10K	0.50% 1/10W	
R313		1-216-025-91	RES,CHIP	100	5% 1/10W	
R314		1-216-025-91	RES,CHIP	100	5% 1/10W	
R315		1-216-025-91	RES,CHIP	100	5% 1/10W	
R316		1-216-025-91	RES,CHIP	100	5% 1/10W	
R317		1-216-025-91	RES,CHIP	100	5% 1/10W	
R318		1-216-025-91	RES,CHIP	100	5% 1/10W	
R319		1-216-025-91	RES,CHIP	100	5% 1/10W	
R320		1-216-049-91	RES,CHIP	1K	5% 1/10W	
R321		1-216-025-91	RES,CHIP	100	5% 1/10W	
R322		1-216-051-00	RES,CHIP	1.2K	5% 1/10W	
R323		1-216-043-91	RES,CHIP	560	5% 1/10W	
R324		1-216-025-91	RES,CHIP	100	5% 1/10W	
R325		1-216-051-00	RES,CHIP	1.2K	5% 1/10W	
R326		1-216-043-91	RES,CHIP	560	5% 1/10W	
R327		1-216-041-00	RES,CHIP	470	5% 1/10W	
R328		1-216-051-00	RES,CHIP	1.2K	5% 1/10W	
R329		1-216-043-91	RES,CHIP	560	5% 1/10W	
R330		1-216-295-91	SHORT	0		
R331		1-216-065-91	RES,CHIP	4.7K	5% 1/10W	
R332		1-216-081-00	RES,CHIP	22K	5% 1/10W	
R333		1-216-129-00	RES,CHIP	2.2M	5% 1/10W	
R334		1-216-057-00	RES,CHIP	2.2K	5% 1/10W	
R336		1-216-057-00	RES,CHIP	2.2K	5% 1/10W	
R337		1-216-057-00	RES,CHIP	2.2K	5% 1/10W	
R338		1-216-057-00	RES,CHIP	2.2K	5% 1/10W	
R340		1-216-049-91	RES,CHIP	1K	5% 1/10W	
R341		1-216-025-91	RES,CHIP	100	5% 1/10W	
R342		1-216-025-91	RES,CHIP	100	5% 1/10W	
R343		1-216-025-91	RES,CHIP	100	5% 1/10W	
R346		1-216-073-00	RES,CHIP	10K	5% 1/10W	
R347		1-216-049-91	RES,CHIP	1K	5% 1/10W	
R349		1-216-295-91	SHORT	0		
R350		1-216-079-00	RES,CHIP	18K	5% 1/10W	
R351		1-216-073-00	RES,CHIP	10K	5% 1/10W	
R352		1-216-041-00	RES,CHIP	470	5% 1/10W	
R353		1-216-041-00	RES,CHIP	470	5% 1/10W	
R354		1-216-041-00	RES,CHIP	470	5% 1/10W	
R355		1-216-041-00	RES,CHIP	470	5% 1/10W	
R356		1-216-049-91	RES,CHIP	1K	5% 1/10W	
R357		1-216-057-00	RES,CHIP	2.2K	5% 1/10W	
R358		1-216-059-00	RES,CHIP	2.7K	5% 1/10W	
R359		1-216-073-00	RES,CHIP	10K	5% 1/10W	
R360		1-216-049-91	RES,CHIP	1K	5% 1/10W	
R364		1-216-045-00	RES,CHIP	680	5% 1/10W	
R502		1-216-089-91	RES,CHIP	47K	5% 1/10W	
R503		1-216-081-00	RES,CHIP	22K	5% 1/10W	
R504		1-216-097-91	RES,CHIP	100K	5% 1/10W	
R505		1-247-843-11	CARBON	3.3K	5% 1/4W	
R506		1-216-097-91	RES,CHIP	100K	5% 1/10W	
R507		1-216-049-91	RES,CHIP	1K	5% 1/10W	
R508		1-216-049-91	RES,CHIP	1K	5% 1/10W	
R509		1-216-073-00	RES,CHIP	10K	5% 1/10W	
R510		1-216-097-91	RES,CHIP	100K	5% 1/10W	
R512		1-215-888-00	METAL OXIDE	220	5% 2W	F
R513		1-216-065-91	RES,CHIP	4.7K	5% 1/10W	
R514		1-216-073-00	RES,CHIP	10K	5% 1/10W	
R515		1-216-377-11	METAL OXIDE	4.7	5% 2W	F
R516		1-249-385-11	CARBON	2.2	5% 1/4W	F
R517		1-216-065-91	RES,CHIP	4.7K	5% 1/10W	
R518		1-216-073-00	RES,CHIP	10K	5% 1/10W	
R519		1-249-443-11	CARBON	0.47	5% 1/4W	F
R520		1-216-089-91	RES,CHIP	47K	5% 1/10W	
R601		1-216-033-00	RES,CHIP	220	5% 1/10W	
R603	⚠	1-218-265-11	METAL	8.2M	5% 1W	
R604		1-260-133-11	CARBON	680K	5% 1/2W	
R605	⚠	1-202-933-61	FUSIBLE	0.1	10% 1/2W	F
R606		1-216-033-00	RES,CHIP	220	5% 1/10W	
R607		1-216-389-11	METAL OXIDE	1	5% 3W	F
R608		1-216-077-00	RES,CHIP	15K	5% 1/10W	
R609		1-215-917-11	METAL OXIDE	1K	5% 3W	F
R611		1-216-077-00	RES,CHIP	15K	5% 1/10W	
R612		1-249-482-11	CARBON	4.7	5% 1/2W	F
R613		1-249-418-11	CARBON	1.2K	5% 1/4W	F
⋈R614	⚠		CARBON		5% 1/4W	F
R615		1-216-366-00	METAL OXIDE	0.56	5% 2W	F
R616		1-249-417-11	CARBON	1K	5% 1/4W	
R617	⚠	1-202-968-11	CEMENTED	1.2	5% 10W	
R618		1-216-073-00	RES,CHIP	10K	5% 1/10W	
R619		1-216-073-00	RES,CHIP	10K	5% 1/10W	
R620		1-216-077-00	RES,CHIP	15K	5% 1/10W	
R621		1-249-393-11	CARBON	10	5% 1/4W	
R622		1-216-073-00	RES,CHIP	10K	5% 1/10W	
R623		1-216-045-00	RES,CHIP	680	5% 1/10W	
R624		1-260-079-11	CARBON	22	5% 1/2W	
R626		1-240-205-91	CARBON	22M	5% 1/2W	
R627		1-249-377-11	CARBON	0.47	5% 1/4W	F
R628		1-216-049-91	RES,CHIP	1K	5% 1/10W	
R629		1-216-049-91	RES,CHIP	1K	5% 1/10W	
R630		1-247-903-00	CARBON	1M	5% 1/4W	
R631		1-216-013-00	RES,CHIP	33	5% 1/10W	
R632		1-216-073-00	RES,CHIP	10K	5% 1/10W	
R633		1-216-077-00	RES,CHIP	15K	5% 1/10W	
R634		1-216-049-91	RES,CHIP	1K	5% 1/10W	
R635		1-216-077-00	RES,CHIP	15K	5% 1/10W	
R636		1-215-927-00	METAL OXIDE	47K	5% 3W	F
R637		1-216-093-91	RES,CHIP	68K	5% 1/10W	
⋈R638	⚠		CARBON		5% 1/4W	F
R639		1-216-055-00	RES,CHIP	1.8K	5% 1/10W	
R640		1-216-061-00	RES,CHIP	3.3K	5% 1/10W	
R641		1-216-041-00	RES,CHIP	470	5% 1/10W	
R644		1-216-055-00	RES,CHIP	1.8K	5% 1/10W	
R645		1-216-669-11	METAL CHIP	5.6K	0.50% 1/10W	
R646		1-216-045-00	RES,CHIP	680	5% 1/10W	
R647		1-249-389-11	CARBON	4.7	5% 1/4W	F
R648		1-216-361-00	METAL OXIDE	0.22	5% 2W	F
R649		1-216-361-00	METAL OXIDE	0.22	5% 2W	F
R650	⚠	1-202-998-11	CEMENTED	1	5% 10W	
R651		1-216-013-00	RES,CHIP	33	5% 1/10W	
R652		1-216-045-00	RES,CHIP	680	5% 1/10W	
R653		1-216-669-11	METAL CHIP	5.6K	0.50% 1/10W	
R655		1-216-073-00	RES,CHIP	10K	5% 1/10W	
R656		1-216-077-00	RES,CHIP	15K	5% 1/10W	
R657		1-215-485-00	METAL	470K	1% 1/4W	
R658		1-216-073-00	RES,CHIP	10K	5% 1/10W	
R659		1-216-077-00	RES,CHIP	15K	5% 1/10W	
R660		1-216-033-00	RES,CHIP	220	5% 1/10W	
R661		1-216-033-00	RES,CHIP	220	5% 1/10W	
R662		1-247-815-91	CARBON	220	5% 1/4W	
R663		1-247-815-91	CARBON	220	5% 1/4W	
R664		1-260-117-11	CARBON	33K	5% 1/2W	
R665		1-260-123-11	CARBON	100K	5% 1/2W	
R666		1-216-057-00	RES,CHIP	2.2K	5% 1/10W	
R667		1-216-051-00	RES,CHIP	1.2K	5% 1/10W	
R668		1-216-485-11	METAL OXIDE	5.6K	5% 3W	F
R669		1-216-639-11	METAL CHIP	330	0.50% 1/10W	
R670		1-216-653-11	METAL CHIP	1.2K	0.50% 1/10W	
R671		1-216-033-00	RES,CHIP	220	5% 1/10W	
R673		1-216-033-00	RES,CHIP	220	5% 1/10W	
R674		1-216-485-11	METAL OXIDE	5.6K	5% 3W	F
R675		1-216-049-91	RES,CHIP	1K	5% 1/10W	
R677		1-216-025-91	RES,CHIP	100	5% 1/10W	
R678		1-216-510-11	METAL OXIDE	8.2K	5% 5W	F
R801		1-218-762-11	METAL CHIP	270K	0.50% 1/10W	
R802		1-215-857-11	METAL OXIDE	10	5% 1W	F
R803		1-260-290-71	CARBON	0.68	5% 1/2W	
R805		1-215-449-00	METAL	15K	1% 1/4W	
R806		1-260-290-71	CARBON	0.68	5% 1/2W	

The components identified by shading and mark ⚠ are critical for safety.
Replace only with part number specified.

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REF. NO.	PART NO.	DESCRIPTION			REMARK
R807	1-260-316-51	CARBON	100	5% 1/2W	
R808	1-214-907-00	METAL	56K	1% 1/2W	
R809	1-216-085-00	RES,CHIP	33K	5% 1/10W	
R811	1-216-057-00	RES,CHIP	2.2K	5% 1/10W	
R812	1-216-687-11	METAL CHIP	33K	0.50% 1/10W	
R814	1-218-756-11	METAL CHIP	150K	0.50% 1/10W	
R816	1-216-685-11	METAL CHIP	27K	0.50% 1/10W	
R817	1-216-057-00	RES,CHIP	2.2K	5% 1/10W	
R818	1-216-681-11	METAL CHIP	18K	0.50% 1/10W	
R819	1-216-077-00	RES,CHIP	15K	5% 1/10W	
R821	1-249-391-11	CARBON	6.8	5% 1/4W	F
R822	1-249-411-11	CARBON	330	5% 1/4W	F
R823	1-216-073-00	RES,CHIP	10K	5% 1/10W	
R824	1-216-687-11	METAL CHIP	33K	0.50% 1/10W	
R825	1-216-073-00	RES,CHIP	10K	5% 1/10W	
R826	1-215-892-11	METAL OXIDE	1K	5% 2W	F
R827	1-216-073-00	RES,CHIP	10K	5% 1/10W	
R828	1-216-097-91	RES,CHIP	100K	5% 1/10W	
R829	1-249-425-11	CARBON	4.7K	5% 1/4W	
R830	1-216-470-00	METAL OXIDE	18	5% 3W	F
R831	1-216-470-00	METAL OXIDE	18	5% 3W	F
R832	1-249-422-11	CARBON	2.7K	5% 1/4W	F
R833	1-249-381-11	CARBON	1	5% 1/4W	F
R834	1-216-470-00	METAL OXIDE	18	5% 3W	F
R835	1-216-069-00	RES,CHIP	6.8K	5% 1/10W	
R836	1-216-073-00	RES,CHIP	10K	5% 1/10W	
R837	1-216-065-91	RES,CHIP	4.7K	5% 1/10W	
R840	1-216-445-11	METAL OXIDE	12	5% 2W	F
		<RELAY>			
RY601	1-755-198-11	RELAY, AC POWER			
RY602	1-755-198-11	RELAY, AC POWER			
RY603	⚠ 1-755-245-11	RELAY, AC POWER			
		<SWITCH>			
S801	1-572-707-11	SWITCH, LEVER (H-CENT)			
		<TRANSFORMER>			
T602	⚠ 1-433-897-11	TRANSFORMER, CONVERTER (SRT)			
T604	⚠ 1-433-540-11	TRANSFORMER, CONVERTER (SBT)			
T801	⚠ 1-453-296-11	FBT ASSY(NX-4001//M3B4)			
T802	⚠ 1-433-660-11	TRANSFORMER, HORIZONTAL LINEAR			
		<THERMISTOR>			
THP601	⚠ 1-810-961-11	THERMISTOR, POSITIVE			
		<TEST PIN>			
TP601	* 1-508-784-21	PIN, CONNECTOR (5mm PITCH) 1P			
TP602	* 1-508-784-21	PIN, CONNECTOR (5mm PITCH) 1P			
TP801	* 1-508-784-21	PIN, CONNECTOR (5mm PITCH) 1P			
		<TUNER>			
TU101	8-598-449-01	TUNER, FSS BTF-LG433 (VF21M40/M70)			
TU101	8-598-451-10	TUNER, FSS BTF-WG441 (VF21M77)			
		<CRYSTAL>			
X301	1-567-504-11	OSCILLATOR, CRYSTAL			
X302	1-567-505-11	OSCILLATOR, CRYSTAL			

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REF. NO.	PART NO.	DESCRIPTION			REMARK
	* A-1331-925-A	CV MOUNT			
		**********			
	4-352-844-01	PIN, LEAD, COATING			
	4-382-854-01	SCREW (M3X8), P, SW (+)			
		<CAPACITOR>			
C511	1-126-964-11	ELECT	10MF	20%	50V
C512	1-104-664-11	ELECT	47MF	20%	10V
C701	1-102-114-00	CERAMIC	470PF	10%	50V
C702	1-126-933-11	ELECT	100MF	20%	16V
C703	1-104-664-11	ELECT	47MF	20%	10V
C704	1-102-951-00	CERAMIC	15PF	5%	50V
C705	1-102-960-00	CERAMIC	24PF	5%	50V
C706	1-102-960-00	CERAMIC	24PF	5%	50V
C707	1-107-651-11	ELECT	4.7MF	20%	250V
C708	1-126-960-11	ELECT	1MF	20%	50V
C709	1-101-006-00	CERAMIC	0.047MF		50V
C710	1-107-651-11	ELECT	4.7MF	20%	250V
C711	1-107-651-11	ELECT	4.7MF	20%	250V
C712	1-101-006-00	CERAMIC	0.047MF		50V
C714	1-101-006-00	CERAMIC	0.047MF		50V
C715	1-101-006-00	CERAMIC	0.047MF		50V
C716	1-102-157-00	CERAMIC	560PF	10%	500V
C717	1-102-157-00	CERAMIC	560PF	10%	500V
C718	1-102-157-00	CERAMIC	560PF	10%	500V
C719	1-102-074-00	CERAMIC	0.001MF	10%	50V
C720	1-162-114-00	CERAMIC	0.0047MF		2KV
C721	1-107-662-11	ELECT	22MF	20%	250V
C961	1-161-830-00	CERAMIC	0.0047MF		500V
C962	1-130-491-00	MYLAR	0.047MF	5%	50V
C963	1-107-638-11	ELECT	33MF	20%	160V
C964	1-126-925-11	ELECT	470MF	20%	10V
C968	1-106-383-00	MYLAR	0.047MF	10%	200V
C969	1-107-949-11	ELECT	2.2MF	20%	160V
C970	1-104-999-11	MYLAR	0.1MF	10%	200V
C972	1-126-935-11	ELECT	470MF	20%	16V
C973	1-130-491-00	MYLAR	0.047MF	5%	50V
C975	1-126-925-11	ELECT	470MF	20%	10V
C978	1-130-471-00	MYLAR	0.001MF	5%	50V
C979	1-130-471-00	MYLAR	0.001MF	5%	50V
C980	1-104-664-11	ELECT	47MF	20%	10V
		<CONNECTOR>			
CN503	* 1-564-508-11	PLUG, CONNECTOR 5P			
CN551	* 1-564-506-11	PLUG, CONNECTOR 3P			
CN701	* 1-564-510-11	PLUG, CONNECTOR 7P			
CN702	1-695-915-11	TAB (CONTACT)			
CN703	* 1-564-508-11	PLUG, CONNECTOR 5P			
CN704	1-695-915-11	TAB (CONTACT)			
CN961	* 1-564-509-11	PLUG, CONNECTOR 6P			
CN962	* 1-564-506-11	PLUG, CONNECTOR 3P			
		<DIODE>			
D504	8-719-911-19	DIODE 1SS119-25			
D505	8-719-911-19	DIODE 1SS119-25			
D701	8-719-109-71	DIODE RD3.9ESB1			
D702	8-719-911-19	DIODE 1SS119-25			
D703	8-719-911-19	DIODE 1SS119-25			
D704	8-719-911-19	DIODE 1SS119-25			
D705	8-719-911-19	DIODE 1SS119-25			
D707	8-719-911-19	DIODE 1SS119-25			
D709	8-719-051-85	DIODE HSS83TD			
D710	8-719-051-85	DIODE HSS83TD			
D711	8-719-051-85	DIODE HSS83TD			
D713	8-719-109-71	DIODE RD3.9ESB1			
D714	8-719-911-19	DIODE 1SS119-25			

CV

The components identified by shading and mark ⚠ are critical for safety.
Replace only with part number specified.

REF. NO.	PART NO.	DESCRIPTION				REMARK
D964	8-719-911-19	DIODE 1SS119-25				
D967	8-719-110-88	DIODE RD39ESB2				
D968	8-719-110-88	DIODE RD39ESB2				
		<IC>				
IC502	8-759-603-37	IC M5216P				
IC701	8-759-346-42	IC TDA6101Q/N3				
IC702	8-759-346-42	IC TDA6101Q/N3				
IC703	8-759-346-42	IC TDA6101Q/N3				
		<JACK>				
J701	⚠ 1-451-470-21	SOCKET, PICTURE TUBE				
		<COIL>				
L701	1-410-667-31	INDUCTOR 22UH				
L961	1-414-187-11	INDUCTOR 47UH				
		<TRANSISTOR>				
Q531	8-729-119-78	TRANSISTOR 2SC2785-HFE				
Q537	8-729-119-78	TRANSISTOR 2SC2785-HFE				
Q538	8-729-119-78	TRANSISTOR 2SC2785-HFE				
Q701	8-729-119-76	TRANSISTOR 2SA1175-HFE				
Q961	8-729-119-78	TRANSISTOR 2SC2785-HFE				
Q962	8-729-119-78	TRANSISTOR 2SC2785-HFE				
Q963	8-729-017-05	TRANSISTOR 2SA1837				
Q965	8-729-017-06	TRANSISTOR 2SC4793				
Q967	8-729-119-78	TRANSISTOR 2SC2785-HFE				
Q968	8-729-119-76	TRANSISTOR 2SA1175-HFE				
		<RESISTOR>				
R501	1-260-080-11	CARBON	27	5%	1/2W	
R511	1-215-859-00	METAL OXIDE	22	5%	1W	F
R537	1-249-429-11	CARBON	10K	5%	1/4W	
R538	1-247-863-91	CARBON	22K	5%	1/4W	
R539	1-247-863-91	CARBON	22K	5%	1/4W	
R545	1-247-863-91	CARBON	22K	5%	1/4W	
R546	1-249-429-11	CARBON	10K	5%	1/4W	
R549	1-249-429-11	CARBON	10K	5%	1/4W	
R550	1-249-429-11	CARBON	10K	5%	1/4W	
R551	1-249-429-11	CARBON	10K	5%	1/4W	
R555	1-249-441-11	CARBON	100K	5%	1/4W	
R556	1-249-441-11	CARBON	100K	5%	1/4W	
R701	1-247-807-31	CARBON	100	5%	1/4W	
R702	1-219-510-11	CARBON	470K	5%	1/2W	
R704	1-215-413-00	METAL	470	1%	1/4W	
R707	1-249-418-11	CARBON	1.2K	5%	1/4W	
R708	1-249-418-11	CARBON	1.2K	5%	1/4W	
R709	1-249-418-11	CARBON	1.2K	5%	1/4W	
R710	1-215-413-00	METAL	470	1%	1/4W	
R711	1-249-421-11	CARBON	2.2K	5%	1/4W	
R712	1-249-429-11	CARBON	10K	5%	1/4W	
R713	1-249-421-11	CARBON	2.2K	5%	1/4W	
R718	1-247-843-11	CARBON	3.3K	5%	1/4W	
R719	1-247-843-11	CARBON	3.3K	5%	1/4W	
R720	1-247-843-11	CARBON	3.3K	5%	1/4W	
R725	1-215-903-11	METAL OXIDE	68K	5%	2W	F
R727	1-215-928-11	METAL OXIDE	68K	5%	3W	F
R729	1-215-928-11	METAL OXIDE	68K	5%	3W	F
R731	1-219-746-11	CARBON	1K	5%	1/2W	
R732	1-219-746-11	CARBON	1K	5%	1/2W	
R733	1-219-746-11	CARBON	1K	5%	1/2W	
R734	1-219-743-51	CARBON	100	5%	1/2W	
R738	1-219-752-11	CARBON	100K	5%	1/2W	
R740	1-216-366-00	METAL OXIDE	0.56	5%	2W	F
R962	1-247-807-31	CARBON	100	5%	1/4W	
R963	1-249-417-11	CARBON	1K	5%	1/4W	
R964	1-260-312-11	CARBON	47	5%	1/2W	
R965	1-249-414-11	CARBON	560	5%	1/4W	F
R966	1-249-417-11	CARBON	1K	5%	1/4W	
R967	1-249-410-11	CARBON	270	5%	1/4W	
R968	1-249-417-11	CARBON	1K	5%	1/4W	
R969	1-249-386-11	CARBON	2.7	5%	1/4W	F
R970	1-249-403-11	CARBON	68	5%	1/4W	
R971	1-247-815-91	CARBON	220	5%	1/4W	
R972	1-249-432-11	CARBON	18K	5%	1/4W	
R973	1-249-403-11	CARBON	68	5%	1/4W	
R974	1-216-476-11	METAL OXIDE	180	5%	3W	F
R975	1-249-417-11	CARBON	1K	5%	1/4W	F
R976	1-249-432-11	CARBON	18K	5%	1/4W	
R977	1-249-429-11	CARBON	10K	5%	1/4W	
R978	1-247-807-31	CARBON	100	5%	1/4W	
R979	1-249-414-11	CARBON	560	5%	1/4W	F
R980	1-247-807-31	CARBON	100	5%	1/4W	
R981	1-249-416-11	CARBON	820	5%	1/4W	
R982	1-249-386-11	CARBON	2.7	5%	1/4W	F
R985	1-249-401-11	CARBON	47	5%	1/4W	F
R986	1-249-397-11	CARBON	22	5%	1/4W	F
		<VARIABLE RESISTOR>				
RV701	⚠ 1-241-714-21	RES, ADJ, METAL FILM 110M (H-STAT)				

VIDEO BLOCK

FF10 MA10

REF. NO.	PART NO.	DESCRIPTION			REMARK
	* A-1241-368-A	FF10 MOUNT			
		**********			
		<CONNECTOR>			
CN1301	1-784-041-41	CONNECTOR, BOARD TO BOARD 9P			
		<DIODE>			
D1303	8-719-053-43	DIODE SLR-325VCT31			
D1304	8-719-053-43	DIODE SLR-325VCT31			
D1305	8-719-053-43	DIODE SLR-325VCT31			
D1306	8-719-053-43	DIODE SLR-325VCT31			
D1307	8-719-053-43	DIODE SLR-325VCT31			
D1308	8-719-061-96	DIODE SLR-325DCT31			
		<SWITCH>			
S1301	1-572-200-11	SWITCH, KEYBOARD (EJECT)			
**********					
	* A-1306-569-A	MA10 COMPL (VF21M77)			
		**********			
	* A-1306-570-A	MA10 COMPL (VF21M40/M70)			
		**********			
	* 3-960-273-01	SPACER, TOP END			
	* 3-960-274-01	SPACER, LED			
	4-382-854-01	SCREW (M3X8), P, SW (+)			
		<CAPACITOR>			
C001	1-163-104-00	CERAMIC CHIP	30PF	5%	50V
C002	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C004	1-163-038-91	CERAMIC CHIP	0.1MF		25V
C006	1-163-241-11	CERAMIC CHIP	39PF	5%	50V
C007	1-163-241-11	CERAMIC CHIP	39PF	5%	50V
C008	1-163-031-11	CERAMIC CHIP	0.01MF		50V
C013	1-126-964-11	ELECT	10MF	20%	50V
C014	1-163-038-91	CERAMIC CHIP	0.1MF		25V
C015	1-104-665-11	ELECT	100MF	20%	10V
C019	1-163-001-11	CERAMIC CHIP	220PF	10%	50V
C020	1-163-809-11	CERAMIC CHIP	0.047MF	10%	25V
C022	1-124-589-11	ELECT	47MF	20%	16V
C024	1-163-259-91	CERAMIC CHIP	220PF	5%	50V
C028	1-163-227-11	CERAMIC CHIP	10PF	0.5PF	50V
C202	1-126-960-11	ELECT	1MF	20%	50V
C208	1-126-963-11	ELECT	4.7MF	20%	50V
C209	1-124-252-00	ELECT	0.33MF	20%	50V
C210	1-163-009-11	CERAMIC CHIP	0.001MF	10%	50V
C211	1-119-821-11	ELECT MELF	2.2MF	20%	50V
C214	1-104-666-11	ELECT	220MF	20%	25V
C216	1-124-261-00	ELECT	10MF	20%	50V
C217	1-126-960-11	ELECT	1MF	20%	50V
C218	1-107-914-31	ELECT	1000MF	20%	50V
C219	1-163-038-91	CERAMIC CHIP	0.1MF		25V
C220	1-126-942-61	ELECT	1000MF	20%	25V
C401	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C402	1-124-589-11	ELECT	47MF	20%	6.3V
C405	1-104-664-11	ELECT	47MF	20%	16V
C406	1-163-031-11	CERAMIC CHIP	0.01MF		50V
C407	1-163-031-11	CERAMIC CHIP	0.01MF		50V
C408	1-164-004-11	CERAMIC CHIP	0.1MF	10%	25V
C409	1-124-589-11	ELECT	47MF	20%	6.3V
C410	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C412	1-126-160-11	ELECT	1MF	20%	50V
C413	1-163-263-11	CERAMIC CHIP	330PF	5%	50V
C414	1-124-589-11	ELECT	47MF	20%	6.3V
C415	1-130-487-00	MYLAR	0.022MF	5%	50V
C416	1-163-031-11	CERAMIC CHIP	0.01MF		50V
C417	1-124-248-00	ELECT	22MF	20%	25V
C418	1-130-488-00	MYLAR	0.027MF	5%	50V
C419	1-124-257-00	ELECT	2.2MF	20%	50V
C421	1-104-665-11	ELECT	100MF	20%	10V
C422	1-163-018-00	CERAMIC CHIP	0.0056MF	10%	50V
C424	1-126-160-11	ELECT	1MF	20%	50V
C425	1-163-038-91	CERAMIC CHIP	0.1MF		25V
C430	1-163-227-11	CERAMIC CHIP	10PF	0.5PF	50V
C431	1-163-231-11	CERAMIC CHIP	15PF	5%	50V
C432	1-163-038-91	CERAMIC CHIP	0.1MF		25V
C435	1-163-038-91	CERAMIC CHIP	0.1MF		25V
C436	1-104-665-11	ELECT	100MF	20%	10V
C441	1-163-031-11	CERAMIC CHIP	0.01MF		50V
C455	1-126-924-11	ELECT	330MF	20%	6.3V
C456	1-163-009-11	CERAMIC CHIP	0.001MF	10%	50V
C457	1-163-009-11	CERAMIC CHIP	0.001MF	10%	50V
C458	1-163-009-11	CERAMIC CHIP	0.001MF	10%	50V
C460	1-163-009-11	CERAMIC CHIP	0.001MF	10%	50V
C701	1-163-033-91	CERAMIC CHIP	0.022MF		50V
C705	1-163-033-91	CERAMIC CHIP	0.022MF		50V
C706	1-163-237-11	CERAMIC CHIP	27PF	5%	50V
C707	1-163-033-91	CERAMIC CHIP	0.022MF		50V
C709	1-163-241-11	CERAMIC CHIP	39PF	5%	50V
C711	1-163-033-91	CERAMIC CHIP	0.022MF		50V
C712	1-163-033-91	CERAMIC CHIP	0.022MF		50V
C713	1-163-241-11	CERAMIC CHIP	39PF	5%	50V
C716	1-163-033-91	CERAMIC CHIP	0.022MF		50V
C717	1-163-031-11	CERAMIC CHIP	0.01MF		50V
C718	1-163-031-11	CERAMIC CHIP	0.01MF		50V
C719	1-163-038-91	CERAMIC CHIP	0.1MF		25V
C720	1-104-665-11	ELECT	100MF	20%	10V
C721	1-163-031-11	CERAMIC CHIP	0.01MF		50V
C722	1-163-038-91	CERAMIC CHIP	0.1MF		25V
C723	1-163-038-91	CERAMIC CHIP	0.1MF		25V
C724	1-104-665-11	ELECT	100MF	20%	10V
C725	1-163-038-91	CERAMIC CHIP	0.1MF		25V
C726	1-163-031-11	CERAMIC CHIP	0.01MF		50V
C727	1-163-031-11	CERAMIC CHIP	0.01MF		50V
C728	1-163-031-11	CERAMIC CHIP	0.01MF		50V
C801	1-164-492-11	CERAMIC CHIP	0.15MF	10%	16V
C803	1-163-031-11	CERAMIC CHIP	0.01MF		50V
C804	1-163-241-11	CERAMIC CHIP	39PF	5%	50V
C807	1-163-227-11	CERAMIC CHIP	10PF	0.5PF	50V
C808	1-163-031-11	CERAMIC CHIP	0.01MF		50V
C813	1-163-251-11	CERAMIC CHIP	100PF	5%	50V
C815	1-163-239-11	CERAMIC CHIP	33PF	5%	50V
C816	1-163-037-11	CERAMIC CHIP	0.022MF	10%	50V
C817	1-163-031-11	CERAMIC CHIP	0.01MF		50V
C818	1-163-031-11	CERAMIC CHIP	0.01MF		50V
C819	1-163-131-00	CERAMIC CHIP	390PF	5%	50V
C820	1-163-809-11	CERAMIC CHIP	0.047MF	10%	25V
C822	1-124-248-00	ELECT	22MF	20%	25V
C823	1-126-960-11	ELECT	1MF	20%	50V
C824	1-163-031-11	CERAMIC CHIP	0.01MF		50V
C825	1-163-257-11	CERAMIC CHIP	180PF	5%	50V
C828	1-163-031-11	CERAMIC CHIP	0.01MF		50V
C829	1-164-346-11	CERAMIC CHIP	1MF		16V
C832	1-115-871-11	ELECT	1MF	20%	50V
C834	1-163-038-91	CERAMIC CHIP	0.1MF		25V
C835	1-163-038-91	CERAMIC CHIP	0.1MF		25V
C837	1-104-664-11	ELECT	47MF	20%	10V
C840	1-104-665-11	ELECT	100MF	20%	10V
C841	1-126-795-11	ELECT	10MF	20%	50V
C842	1-163-031-11	CERAMIC CHIP	0.01MF		50V
C843	1-104-665-11	ELECT	100MF	20%	10V
C844	1-126-795-11	ELECT	10MF	20%	50V

MA10

REF. NO.	PART NO.	DESCRIPTION			REMARK
C845	1-164-346-11	CERAMIC CHIP	1MF		16V
C846	1-163-021-91	CERAMIC CHIP	0.01MF	10%	50V
C847	1-163-038-91	CERAMIC CHIP	0.1MF		25V
C848	1-163-031-11	CERAMIC CHIP	0.01MF		50V
C849	1-126-960-11	ELECT	1MF	20%	50V
C850	1-163-031-11	CERAMIC CHIP	0.01MF		50V
C851	1-163-809-11	CERAMIC CHIP	0.047MF	10%	25V
C852	1-124-589-11	ELECT	47MF	20%	6.3V
C853	1-163-038-91	CERAMIC CHIP	0.1MF		25V
C854	1-126-960-11	ELECT	1MF	20%	50V
C855	1-163-809-11	CERAMIC CHIP	0.047MF	10%	25V
C856	1-126-960-11	ELECT	1MF	20%	50V
C857	1-163-037-11	CERAMIC CHIP	0.022MF	10%	50V
C858	1-126-960-11	ELECT	1MF	20%	50V
C859	1-163-038-91	CERAMIC CHIP	0.1MF		25V
C860	1-164-346-11	CERAMIC CHIP	1MF		16V
C861	1-163-031-11	CERAMIC CHIP	0.01MF		50V
C862	1-163-031-11	CERAMIC CHIP	0.01MF		50V
C863	1-124-589-11	ELECT	47MF	20%	10V
C864	1-163-038-91	CERAMIC CHIP	0.1MF		25V
C865	1-164-004-11	CERAMIC CHIP	0.1MF	10%	25V
C866	1-164-004-11	CERAMIC CHIP	0.1MF	10%	25V
C867	1-163-021-91	CERAMIC CHIP	0.01MF	10%	50V
C868	1-163-235-11	CERAMIC CHIP	22PF	5%	50V
C879	1-163-121-00	CERAMIC CHIP	150PF	5%	50V
C901	1-126-157-11	ELECT	10MF	20%	16V
C904	1-126-964-11	ELECT	10MF	20%	50V
C905	1-164-004-11	CERAMIC CHIP	0.1MF	10%	25V
C906	1-127-720-91	ELECT MELF	470MF	20%	16V
C907	1-164-346-11	CERAMIC CHIP	1MF		16V
C908	1-164-346-11	CERAMIC CHIP	1MF		16V
C912	1-164-346-11	CERAMIC CHIP	1MF		16V
C917	1-164-346-11	CERAMIC CHIP	1MF		16V
C919	1-164-346-11	CERAMIC CHIP	1MF		16V
C920	1-164-346-11	CERAMIC CHIP	1MF		16V
C923	1-164-346-11	CERAMIC CHIP	1MF		16V
C1001	1-137-397-11	FILM	0.047MF	5%	100V
C1002	1-163-031-11	CERAMIC CHIP	0.01MF		50V
C1003	1-163-021-91	CERAMIC CHIP	0.01MF	10%	50V
C1004	1-104-664-11	ELECT	47MF	20%	10V
C1005	1-104-664-11	ELECT	47MF	20%	10V
C1006	1-163-021-91	CERAMIC CHIP	0.01MF	10%	50V
C1007	1-104-664-11	ELECT	47MF	20%	10V
C1008	1-126-963-11	ELECT	4.7MF	20%	50V
C1009	1-126-964-11	ELECT	10MF	20%	50V
C1010	1-137-370-11	FILM	0.01MF	5%	50V
C1011	1-163-011-11	CERAMIC CHIP	0.0015MF	10%	50V
C1012	1-163-011-11	CERAMIC CHIP	0.0015MF	10%	50V
C1013	1-164-346-11	CERAMIC CHIP	1MF		16V
C1014	1-163-031-11	CERAMIC CHIP	0.01MF		50V
C1015	1-126-960-11	ELECT	1MF	20%	50V
C1016	1-104-664-11	ELECT	47MF	20%	16V
C1017	1-126-963-11	ELECT	4.7MF	20%	50V
C1019	1-104-664-11	ELECT	47MF	20%	10V
C1020	1-126-960-11	ELECT	1MF	20%	50V
C1021	1-126-964-11	ELECT	10MF	20%	50V
C1104	1-163-038-91	CERAMIC CHIP	0.1MF		25V
C1108	1-164-346-11	CERAMIC CHIP	1MF		16V
C1110	1-128-551-11	ELECT	22MF	20%	25V
C1111	1-128-551-11	ELECT	22MF	20%	25V

<CONNECTOR>

CN001	1-569-937-11	SOCKET, CONNECTOR 21P	
CN002	* 1-569-930-11	SOCKET, CONNECTOR 13P	
CN004	1-784-038-11	CONNECTOR, BOARD TO BOARD 9P	
CN251	* 1-564-506-11	PLUG, CONNECTOR 3P	
CN401	* 1-569-926-11	SOCKET, CONNECTOR 7P	
CN403	1-779-723-11	CONNECTOR, BOARD TO BOARD 9P	
CN404	* 1-766-716-11	CONNECTOR, BOARD TO BOARD 3P	
CN701	* 1-695-331-31	PIN, CONNECTOR (PC BOARD) 8P	
CN702	* 1-560-892-00	PIN, CONNECTOR 4P	
CN1001	* 1-564-506-11	PLUG, CONNECTOR 3P	
CN1002	* 1-564-509-11	PLUG, CONNECTOR 6P	
CN1003	* 1-564-511-11	PLUG, CONNECTOR 8P	
CN1004	1-778-226-21	CONNECTOR, BOARD TO BOARD 6P	

<DIODE>

D001	8-719-911-19	DIODE 1SS119-25
D002	8-719-921-54	DIODE MTZJ-6.2B
D004	8-719-921-54	DIODE MTZJ-6.2B
D005	8-719-981-99	DIODE MTZJ-3.3
D006	8-719-109-84	DIODE RD5.1ESB1
D007	8-719-911-19	DIODE 1SS119-25
D201	8-719-921-54	DIODE MTZJ-6.2B
D202	8-719-921-54	DIODE MTZJ-6.2B
D251	8-719-921-54	DIODE MTZJ-6.2B
D252	8-719-921-54	DIODE MTZJ-6.2B
D253	8-719-921-54	DIODE MTZJ-6.2B
D254	8-719-921-54	DIODE MTZJ-6.2B
D402	8-719-911-19	DIODE 1SS119-25
D403	8-719-200-82	DIODE 11ES2
D405	8-719-200-82	DIODE 11ES2
D406	8-719-200-82	DIODE 11ES2
D451	8-719-048-26	DIODE GL528V1
D1101	8-719-921-54	DIODE MTZJ-6.2B
D1103	8-719-921-54	DIODE MTZJ-6.2B
D1105	8-719-923-60	DIODE MTZJ-T-77-9.1A
D1110	8-719-921-54	DIODE MTZJ-6.2B
D1117	8-719-911-19	DIODE 1SS119-25
D1118	8-719-911-19	DIODE 1SS119-25
D1119	8-719-911-19	DIODE 1SS119-25

<IC>

IC001	8-752-906-46	IC CXP85460-220Q
IC002	8-759-527-77	IC M24C16-MN6T
IC003	8-759-510-43	IC PST572C
IC201	8-759-442-73	IC TDA7494
IC401	8-759-353-59	IC LB1643
IC402	8-752-906-47	IC CXP87852-061Q (VF21M77)
IC402	8-752-906-48	IC CXP87852-062Q (VF21M40/M70)
IC403	8-759-702-02	IC NJM062M
IC404	8-759-510-73	IC BA10393F-E2
IC405	8-759-438-83	IC BA6305F-E2
IC701	8-759-357-84	IC HA118295NT
IC801	8-759-439-51	IC LC89978M-TE-L
IC802	8-759-492-90	IC LA71504M-MPB
IC901	8-752-081-33	IC CXA2089Q
IC1001	8-759-499-30	IC BA7755AF-E2
IC1101	8-742-041-12	HYB IC SBX1981-11

<JACK>

J1101	1-779-205-11	JACK, PIN 2P (GAME/INPUT (REAR))
J1102	1-568-267-21	JACK (HEADPHONE)

<CHIP CONDUCTOR>

JR101	1-216-295-91	SHORT	0
JR102	1-216-295-91	SHORT	0
JR103	1-216-295-91	SHORT	0
JR104	1-216-295-91	SHORT	0
JR105	1-216-295-91	SHORT	0
JR106	1-216-295-91	SHORT	0
JR107	1-216-295-91	SHORT	0

REF. NO.	PART NO.	DESCRIPTION		REMARK
JR108	1-216-295-91	SHORT	0	
JR109	1-216-295-91	SHORT	0	
JR111	1-216-295-91	SHORT	0	
JR115	1-216-295-91	SHORT	0	
JR116	1-216-295-91	SHORT	0	
JR119	1-216-295-91	SHORT	0	
JR120	1-216-295-91	SHORT	0	
JR121	1-216-295-91	SHORT	0	
JR122	1-216-295-91	SHORT	0	
JR123	1-216-295-91	SHORT	0	
JR124	1-216-295-91	SHORT	0	
JR402	1-216-295-91	SHORT	0	
JR403	1-216-295-91	SHORT	0	
		<COIL>		
L001	1-469-013-31	INDUCTOR 18UH		
L002	1-410-509-11	INDUCTOR 10UH		
L004	1-414-856-11	INDUCTOR 10UH		
L402	1-410-509-11	INDUCTOR 10UH		
L403	1-414-856-11	INDUCTOR 10UH		
L431	1-410-509-11	INDUCTOR 10UH		
L703	1-414-857-11	INDUCTOR 100UH		
L704	1-414-857-11	INDUCTOR 100UH		
L801	1-410-439-11	INDUCTOR 470UH		
L803	1-408-977-21	INDUCTOR 39UH		
L804	1-408-977-21	INDUCTOR 39UH		
L808	1-414-184-41	INDUCTOR 15UH		
L809	1-414-857-11	INDUCTOR 100UH		
L811	1-414-185-41	INDUCTOR 22UH		
L812	1-414-185-41	INDUCTOR 22UH		
L813	1-414-187-11	INDUCTOR 47UH		
L815	1-414-190-31	INDUCTOR 120UH		
L1001	1-414-857-11	INDUCTOR 100UH		
L1002	1-414-857-11	INDUCTOR 100UH		
L1003	1-420-872-00	COIL, AIR CORE		
L1004	1-414-187-11	INDUCTOR 47UH		
		<PHOTO COUPLER>		
PH451	8-749-013-23	PHOTO INTERRUPTER GP3S120		
PH452	8-749-013-23	PHOTO INTERRUPTER GP3S120		
		<TRANSISTOR>		
Q001	8-729-216-22	TRANSISTOR 2SA1162-G		
Q002	8-729-422-27	TRANSISTOR 2SD601A-Q		
Q003	8-729-421-22	TRANSISTOR UN2211		
Q009	8-729-422-27	TRANSISTOR 2SD601A-Q		
Q201	8-729-422-27	TRANSISTOR 2SD601A-Q		
Q402	8-729-424-18	TRANSISTOR UN2113		
Q451	8-729-281-53	TRANSISTOR 2SC1815-GR		
Q452	8-729-042-88	TRANSISTOR RPT-37PB3F		
Q453	8-729-042-88	TRANSISTOR RPT-37PB3F		
Q701	8-729-422-27	TRANSISTOR 2SD601A-Q		
Q801	8-729-422-27	TRANSISTOR 2SD601A-Q		
Q803	8-729-422-27	TRANSISTOR 2SD601A-Q		
Q808	8-729-422-27	TRANSISTOR 2SD601A-Q		
Q809	8-729-421-19	TRANSISTOR UN2213		
Q812	8-729-422-27	TRANSISTOR 2SD601A-Q		
Q815	8-729-422-27	TRANSISTOR 2SD601A-Q		
Q821	8-729-422-27	TRANSISTOR 2SD601A-Q		
Q823	8-729-422-27	TRANSISTOR 2SD601A-Q		
Q824	8-729-216-22	TRANSISTOR 2SA1162-G		
Q825	8-729-422-27	TRANSISTOR 2SD601A-Q		
Q830	8-729-216-22	TRANSISTOR 2SA1162-G		
Q901	8-729-216-22	TRANSISTOR 2SA1162-G		
Q902	8-729-216-22	TRANSISTOR 2SA1162-G		
Q1001	8-729-802-91	TRANSISTOR 2SD879		
Q1002	8-729-422-27	TRANSISTOR 2SD601A-Q		
Q1101	8-729-422-27	TRANSISTOR 2SD601A-Q		
		<RESISTOR>		
R003	1-216-049-91	RES,CHIP	1K 5% 1/10W	
R005	1-216-089-91	RES,CHIP	47K 5% 1/10W	
R007	1-249-421-11	CARBON	2.2K 5% 1/4W	
R008	1-216-049-91	RES,CHIP	1K 5% 1/10W	
R009	1-216-049-91	RES,CHIP	1K 5% 1/10W	
R010	1-216-049-91	RES,CHIP	1K 5% 1/10W	
R011	1-216-049-91	RES,CHIP	1K 5% 1/10W	
R012	1-216-025-91	RES,CHIP	100 5% 1/10W	
R013	1-216-049-91	RES,CHIP	1K 5% 1/10W	
R014	1-216-049-91	RES,CHIP	1K 5% 1/10W	
R015	1-216-049-91	RES,CHIP	1K 5% 1/10W	
R016	1-216-049-91	RES,CHIP	1K 5% 1/10W	
R017	1-216-025-91	RES,CHIP	100 5% 1/10W	
R018	1-216-049-91	RES,CHIP	1K 5% 1/10W	
R020	1-216-067-00	RES,CHIP	5.6K 5% 1/10W	
R021	1-216-065-91	RES,CHIP	4.7K 5% 1/10W	
R022	1-216-065-91	RES,CHIP	4.7K 5% 1/10W	
R024	1-216-073-00	RES,CHIP	10K 5% 1/10W	
R025	1-216-073-00	RES,CHIP	10K 5% 1/10W	
R027	1-216-049-91	RES,CHIP	1K 5% 1/10W	
R028	1-216-295-91	SHORT	0	
R029	1-216-049-91	RES,CHIP	1K 5% 1/10W	
R030	1-216-033-00	RES,CHIP	220 5% 1/10W	
R031	1-216-055-00	RES,CHIP	1.8K 5% 1/10W	
R032	1-216-055-00	RES,CHIP	1.8K 5% 1/10W	
R033	1-216-055-00	RES,CHIP	1.8K 5% 1/10W	
R034	1-216-041-00	RES,CHIP	470 5% 1/10W	
R035	1-216-049-91	RES,CHIP	1K 5% 1/10W	
R036	1-216-025-91	RES,CHIP	100 5% 1/10W	
R037	1-216-025-91	RES,CHIP	100 5% 1/10W	
R038	1-216-025-91	RES,CHIP	100 5% 1/10W	
R039	1-216-025-91	RES,CHIP	100 5% 1/10W	
R040	1-216-045-00	RES,CHIP	680 5% 1/10W	
R041	1-216-065-91	RES,CHIP	4.7K 5% 1/10W	
R042	1-216-065-91	RES,CHIP	4.7K 5% 1/10W	
R043	1-216-065-91	RES,CHIP	4.7K 5% 1/10W	
R044	1-216-065-91	RES,CHIP	4.7K 5% 1/10W	
R045	1-216-295-91	SHORT	0	
R046	1-216-025-91	RES,CHIP	100 5% 1/10W	
R047	1-216-025-91	RES,CHIP	100 5% 1/10W	
R048	1-216-041-00	RES,CHIP	470 5% 1/10W	
R051	1-216-065-91	RES,CHIP	4.7K 5% 1/10W	
R052	1-216-073-00	RES,CHIP	10K 5% 1/10W	
R053	1-216-057-00	RES,CHIP	2.2K 5% 1/10W	
R054	1-216-049-91	RES,CHIP	1K 5% 1/10W	
R055	1-216-033-00	RES,CHIP	220 5% 1/10W	
R056	1-216-033-00	RES,CHIP	220 5% 1/10W	
R057	1-216-049-91	RES,CHIP	1K 5% 1/10W	
R058	1-216-039-00	RES,CHIP	390 5% 1/10W	
R059	1-216-075-00	RES,CHIP	12K 5% 1/10W	
R060	1-216-073-00	RES,CHIP	10K 5% 1/10W	
R061	1-216-055-00	RES,CHIP	1.8K 5% 1/10W	
R062	1-216-055-00	RES,CHIP	1.8K 5% 1/10W	
R063	1-216-055-00	RES,CHIP	1.8K 5% 1/10W	
R064	1-216-121-91	RES,CHIP	1M 5% 1/10W	
R065	1-216-097-91	RES,CHIP	100K 5% 1/10W	
R066	1-216-045-00	RES,CHIP	680 5% 1/10W	
R067	1-216-041-00	RES,CHIP	470 5% 1/10W	
R068	1-216-041-00	RES,CHIP	470 5% 1/10W	
R070	1-216-033-00	RES,CHIP	220 5% 1/10W	
R073	1-216-073-00	RES,CHIP	10K 5% 1/10W	
R075	1-216-049-91	RES,CHIP	1K 5% 1/10W	
R076	1-216-065-91	RES,CHIP	4.7K 5% 1/10W	
R077	1-216-089-91	RES,CHIP	47K 5% 1/10W	

MA10

REF. NO.	PART NO.	DESCRIPTION			REMARK
R078	1-216-073-00	RES,CHIP	10K	5%	1/10W
R084	1-216-033-00	RES,CHIP	220	5%	1/10W
R085	1-216-049-91	RES,CHIP	1K	5%	1/10W
R096	1-216-069-00	RES,CHIP	6.8K	5%	1/10W
R097	1-216-073-00	RES,CHIP	10K	5%	1/10W
R098	1-216-049-91	RES,CHIP	1K	5%	1/10W
R099	1-216-049-91	RES,CHIP	1K	5%	1/10W
R101	1-216-073-00	RES,CHIP	10K	5%	1/10W
R204	1-249-429-11	CARBON	10K	5%	1/4W
R205	1-216-049-91	RES,CHIP	1K	5%	1/10W
R206	1-216-109-00	RES,CHIP	330K	5%	1/10W
R210	1-216-057-00	RES,CHIP	2.2K	5%	1/10W
R211	1-216-073-00	RES,CHIP	10K	5%	1/10W
R212	1-216-047-91	RES,CHIP	820	5%	1/10W
R215	1-216-295-91	SHORT	0		
R216	1-249-385-11	CARBON	2.2	5%	1/4W F
R218	1-216-105-91	RES,CHIP	220K	5%	1/10W
R219	1-216-033-00	RES,CHIP	220	5%	1/10W
R220	1-216-065-91	RES,CHIP	4.7K	5%	1/10W
R401	1-216-073-00	RES,CHIP	10K	5%	1/10W
R402	1-216-073-00	RES,CHIP	10K	5%	1/10W
R403	1-216-049-91	RES,CHIP	1K	5%	1/10W
R404	1-216-073-00	RES,CHIP	10K	5%	1/10W
R405	1-216-073-00	RES,CHIP	10K	5%	1/10W
R406	1-216-053-00	RES,CHIP	1.5K	5%	1/10W
R407	1-216-053-00	RES,CHIP	1.5K	5%	1/10W
R408	1-216-073-00	RES,CHIP	10K	5%	1/10W
R409	1-216-073-00	RES,CHIP	10K	5%	1/10W
R410	1-216-049-91	RES,CHIP	1K	5%	1/10W
R411	1-216-065-91	RES,CHIP	4.7K	5%	1/10W
R412	1-216-057-00	RES,CHIP	2.2K	5%	1/10W
R414	1-216-097-91	RES,CHIP	100K	5%	1/10W
R415	1-216-097-91	RES,CHIP	100K	5%	1/10W
R416	1-216-105-91	RES,CHIP	220K	5%	1/10W
R417	1-216-111-00	RES,CHIP	390K	5%	1/10W
R418	1-216-097-91	RES,CHIP	100K	5%	1/10W
R419	1-216-097-91	RES,CHIP	100K	5%	1/10W
R420	1-216-117-00	RES,CHIP	680K	5%	1/10W
R421	1-216-079-00	RES,CHIP	18K	5%	1/10W
R422	1-216-689-11	RES,CHIP	39K	5%	1/10W
R423	1-216-049-91	RES,CHIP	1K	5%	1/10W
R424	1-216-675-11	METAL CHIP	10K	0.50%	1/10W
R425	1-216-057-00	RES,CHIP	2.2K	5%	1/10W
R426	1-216-057-00	RES,CHIP	2.2K	5%	1/10W
R427	1-216-103-00	RES,CHIP	180K	5%	1/10W
R428	1-216-675-11	METAL CHIP	10K	0.50%	1/10W
R429	1-216-065-91	RES,CHIP	4.7K	5%	1/10W
R430	1-216-037-00	RES,CHIP	330	5%	1/10W
R432	1-216-073-00	RES,CHIP	10K	5%	1/10W
R433	1-216-073-00	RES,CHIP	10K	5%	1/10W
R435	1-216-049-91	RES,CHIP	1K	5%	1/10W
R436	1-216-043-91	RES,CHIP	560	5%	1/10W
R437	1-216-065-91	RES,CHIP	4.7K	5%	1/10W
R438	1-216-295-91	SHORT	0		
R439	1-216-089-91	RES,CHIP	47K	5%	1/10W
R440	1-216-089-91	RES,CHIP	47K	5%	1/10W
R441	1-216-089-91	RES,CHIP	47K	5%	1/10W
R442	1-216-089-91	RES,CHIP	47K	5%	1/10W
R443	1-216-049-91	RES,CHIP	1K	5%	1/10W
R444	1-216-295-91	SHORT	0		
R445	1-216-089-91	RES,CHIP	47K	5%	1/10W
R446	1-216-075-00	RES,CHIP	12K	5%	1/10W
R447	1-216-081-00	RES,CHIP	22K	5%	1/10W
R448	1-216-075-00	RES,CHIP	12K	5%	1/10W
R449	1-216-081-00	RES,CHIP	22K	5%	1/10W
R450	1-216-077-00	RES,CHIP	15K	5%	1/10W
R451	1-216-057-00	RES,CHIP	2.2K	5%	1/10W
R452	1-249-400-11	CARBON	39	5%	1/4W
R453	1-249-400-11	CARBON	39	5%	1/4W
R454	1-249-411-11	CARBON	330	5%	1/4W
R455	1-216-089-91	RES,CHIP	47K	5%	1/10W
R456	1-216-089-91	RES,CHIP	47K	5%	1/10W
R457	1-216-085-00	RES,CHIP	33K	5%	1/10W
R458	1-216-085-00	RES,CHIP	33K	5%	1/10W
R459	1-216-085-00	RES,CHIP	33K	5%	1/10W
R460	1-216-057-00	RES,CHIP	2.2K	5%	1/10W
R461	1-216-085-00	RES,CHIP	33K	5%	1/10W
R465	1-216-045-00	RES,CHIP	680	5%	1/10W
R466	1-216-045-00	RES,CHIP	680	5%	1/10W
R467	1-216-045-00	RES,CHIP	680	5%	1/10W
R468	1-216-089-91	RES,CHIP	47K	5%	1/10W
R469	1-216-049-91	RES,CHIP	1K	5%	1/10W
R470	1-216-041-00	RES,CHIP	470	5%	1/10W
R471	1-216-041-00	RES,CHIP	470	5%	1/10W
R472	1-216-041-00	RES,CHIP	470	5%	1/10W
R473	1-216-041-00	RES,CHIP	470	5%	1/10W
R474	1-216-073-00	RES,CHIP	10K	5%	1/10W
R476	1-216-049-91	RES,CHIP	1K	5%	1/10W
R477	1-216-049-91	RES,CHIP	1K	5%	1/10W
R478	1-216-049-91	RES,CHIP	1K	5%	1/10W
R479	1-216-065-91	RES,CHIP	4.7K	5%	1/10W
R480	1-216-049-91	RES,CHIP	1K	5%	1/10W
R481	1-216-049-91	RES,CHIP	1K	5%	1/10W
R484	1-216-049-91	RES,CHIP	1K	5%	1/10W
R487	1-216-045-00	RES,CHIP	680	5%	1/10W
R701	1-216-025-91	RES,CHIP	100	5%	1/10W
R702	1-216-045-00	RES,CHIP	680	5%	1/10W
R705	1-216-055-00	RES,CHIP	1.8K	5%	1/10W
R706	1-216-081-00	RES,CHIP	22K	5%	1/10W
R707	1-216-073-00	RES,CHIP	10K	5%	1/10W
R708	1-216-049-91	RES,CHIP	1K	5%	1/10W
R709	1-216-061-00	RES,CHIP	3.3K	5%	1/10W
R710	1-216-049-91	RES,CHIP	1K	5%	1/10W
R711	1-216-049-91	RES,CHIP	1K	5%	1/10W
R712	1-216-049-91	RES,CHIP	1K	5%	1/10W
R714	1-216-295-91	SHORT	0		
R716	1-216-295-91	SHORT	0		
R801	1-216-041-00	RES,CHIP	470	5%	1/10W
R803	1-216-057-00	RES,CHIP	2.2K	5%	1/10W
R810	1-216-041-00	RES,CHIP	470	5%	1/10W
R811	1-216-041-00	RES,CHIP	470	5%	1/10W
R813	1-216-047-91	RES,CHIP	820	5%	1/10W
R814	1-216-041-00	RES,CHIP	470	5%	1/10W
R815	1-247-815-91	CARBON	220	5%	1/4W
R819	1-216-081-00	RES,CHIP	22K	5%	1/10W
R820	1-216-081-00	RES,CHIP	22K	5%	1/10W
R823	1-216-049-91	RES,CHIP	1K	5%	1/10W
R824	1-216-049-91	RES,CHIP	1K	5%	1/10W
R827	1-216-025-91	RES,CHIP	100	5%	1/10W
R829	1-216-065-91	RES,CHIP	4.7K	5%	1/10W
R831	1-216-295-91	SHORT	0		
R833	1-216-295-91	SHORT	0		
R834	1-216-295-91	SHORT	0		
R835	1-216-041-00	RES,CHIP	470	5%	1/10W
R837	1-216-073-00	RES,CHIP	10K	5%	1/10W
R838	1-216-065-91	RES,CHIP	4.7K	5%	1/10W
R839	1-216-055-00	RES,CHIP	1.8K	5%	1/10W
R840	1-216-033-00	RES,CHIP	220	5%	1/10W
R841	1-216-069-00	RES,CHIP	6.8K	5%	1/10W
R843	1-216-047-91	RES,CHIP	820	5%	1/10W
R845	1-216-057-00	RES,CHIP	2.2K	5%	1/10W
R847	1-216-295-91	SHORT	0		
R848	1-216-065-91	RES,CHIP	4.7K	5%	1/10W
R849	1-216-295-91	SHORT	0		
R850	1-216-065-91	RES,CHIP	4.7K	5%	1/10W
R852	1-216-053-00	RES,CHIP	1.5K	5%	1/10W
R855	1-216-055-00	RES,CHIP	1.8K	5%	1/10W
R856	1-216-071-00	RES,CHIP	8.2K	5%	1/10W

REF. NO.	PART NO.	DESCRIPTION			REMARK
R857	1-216-049-91	RES,CHIP	1K	5%	1/10W
R858	1-216-049-91	RES,CHIP	1K	5%	1/10W
R860	1-216-061-00	RES,CHIP	3.3K	5%	1/10W
R861	1-216-089-91	RES,CHIP	47K	5%	1/10W
R863	1-216-045-00	RES,CHIP	680	5%	1/10W
R864	1-216-295-91	SHORT	0		
R865	1-216-295-91	SHORT	0		
R867	1-216-057-00	RES,CHIP	2.2K	5%	1/10W
R869	1-216-049-91	RES,CHIP	1K	5%	1/10W
R870	1-216-057-00	RES,CHIP	2.2K	5%	1/10W
R873	1-216-049-91	RES,CHIP	1K	5%	1/10W
R875	1-216-295-91	SHORT	0		
R881	1-216-089-91	RES,CHIP	47K	5%	1/10W
R882	1-216-689-11	RES,CHIP	39K	5%	1/10W
R883	1-216-049-91	RES,CHIP	1K	5%	1/10W
R885	1-216-049-91	RES,CHIP	1K	5%	1/10W
R901	1-216-065-91	RES,CHIP	4.7K	5%	1/10W
R902	1-216-057-00	RES,CHIP	2.2K	5%	1/10W
R903	1-216-057-00	RES,CHIP	2.2K	5%	1/10W
R905	1-216-025-91	RES,CHIP	100	5%	1/10W
R909	1-216-057-00	RES,CHIP	2.2K	5%	1/10W
R911	1-216-097-91	RES,CHIP	100K	5%	1/10W
R913	1-216-295-91	SHORT	0		
R914	1-216-025-91	RES,CHIP	100	5%	1/10W
R916	1-216-057-00	RES,CHIP	2.2K	5%	1/10W
R917	1-216-025-91	RES,CHIP	100	5%	1/10W
R918	1-216-065-91	RES,CHIP	4.7K	5%	1/10W
R919	1-216-025-91	RES,CHIP	100	5%	1/10W
R920	1-216-025-91	RES,CHIP	100	5%	1/10W
R926	1-216-025-91	RES,CHIP	100	5%	1/10W
R928	1-216-025-91	RES,CHIP	100	5%	1/10W
R931	1-216-025-91	RES,CHIP	100	5%	1/10W
R934	1-216-025-91	RES,CHIP	100	5%	1/10W
R1002	1-249-408-11	CARBON	180	5%	1/4W
R1003	1-249-381-11	CARBON	1	5%	1/4W
R1004	1-216-063-91	RES,CHIP	3.9K	5%	1/10W
R1005	1-249-401-11	CARBON	47	5%	1/4W
R1006	1-216-075-00	RES,CHIP	12K	5%	1/10W
R1007	1-216-079-00	RES,CHIP	18K	5%	1/10W
R1008	1-216-035-00	RES,CHIP	270	5%	1/10W
R1010	1-216-109-00	RES,CHIP	330K	5%	1/10W
R1011	1-216-069-00	RES,CHIP	6.8K	5%	1/10W
R1012	1-216-047-91	RES,CHIP	820	5%	1/10W
R1013	1-216-079-00	RES,CHIP	18K	5%	1/10W
R1014	1-216-053-00	RES,CHIP	1.5K	5%	1/10W
R1015	1-216-073-00	RES,CHIP	10K	5%	1/10W
R1016	1-216-075-00	RES,CHIP	12K	5%	1/10W
R1017	1-249-426-11	CARBON	5.6K	5%	1/4W
R1018	1-216-061-00	RES,CHIP	3.3K	5%	1/10W
R1019	1-216-073-00	RES,CHIP	10K	5%	1/10W
R1020	1-216-025-91	RES,CHIP	100	5%	1/10W
R1023	1-216-067-00	RES,CHIP	5.6K	5%	1/10W
R1024	1-216-093-91	RES,CHIP	68K	5%	1/10W
R1025	1-216-129-00	RES,CHIP	2.2M	5%	1/10W
R1101	1-216-295-91	SHORT	0		
R1102	1-216-067-00	RES,CHIP	5.6K	5%	1/10W
R1103	1-216-022-00	RES,CHIP	75	5%	1/10W
R1106	1-216-089-91	RES,CHIP	47K	5%	1/10W
R1107	1-216-055-00	RES,CHIP	1.8K	5%	1/10W
R1109	1-216-079-00	RES,CHIP	18K	5%	1/10W
R1111	1-216-067-00	RES,CHIP	5.6K	5%	1/10W
R1112	1-216-061-00	RES,CHIP	3.3K	5%	1/10W
R1113	1-216-061-00	RES,CHIP	3.3K	5%	1/10W
R1114	1-216-051-00	RES,CHIP	1.2K	5%	1/10W
R1115	1-216-055-00	RES,CHIP	1.8K	5%	1/10W
R1116	1-216-047-91	RES,CHIP	820	5%	1/10W
R1117	1-216-045-00	RES,CHIP	680	5%	1/10W
R1119	1-216-295-91	SHORT	0		
R1128	1-216-037-00	RES,CHIP	330	5%	1/10W
R1129	1-216-037-00	RES,CHIP	330	5%	1/10W
R1132	1-216-073-00	RES,CHIP	10K	5%	1/10W
R1133	1-216-065-91	RES,CHIP	4.7K	5%	1/10W
R1134	1-216-065-91	RES,CHIP	4.7K	5%	1/10W
R1135	1-216-065-91	RES,CHIP	4.7K	5%	1/10W
R1136	1-216-051-00	RES,CHIP	1.2K	5%	1/10W
R1137	1-216-045-00	RES,CHIP	680	5%	1/10W
R1138	1-216-047-91	RES,CHIP	820	5%	1/10W
R1139	1-216-093-91	RES,CHIP	68K	5%	1/10W
R1140	1-216-049-91	RES,CHIP	1K	5%	1/10W

<SWITCH>

S001	1-473-555-11	ENCODER, ROTARY (QUICK TIMER)
S401	1-771-155-11	SWITCH, ROTARY (MODE)
S451	1-762-108-11	SWITCH, PUSH (1 KEY) (REC/PROF)
S1101	1-571-032-11	SWITCH, PUSH (1 KEY) (POWER)
S1102	1-570-577-11	SWITCH, PUSH (STOP)
S1103	1-570-577-11	SWITCH, PUSH (REW)
S1104	1-570-577-11	SWITCH, PUSH (PLAY/GAME)
S1105	1-570-577-11	SWITCH, PUSH (FF/INPUT SELECT)
S1106	1-570-577-11	SWITCH, PUSH (PAUSE/VOL -)
S1107	1-570-577-11	SWITCH, PUSH (REC/VOL +)
S1108	1-571-532-21	SWITCH, TACTIL (PROG -)
S1109	1-571-532-21	SWITCH, TACTIL (PROG +)

<TRANSFORMER>

T1001	1-431-097-11	TRANSFORMER, BIAS OSCILLATION

<CRYSTAL>

X001	1-767-755-11	VIBRATOR, CRYSTAL
X430	1-760-494-11	VIBRATOR, CRYSTAL
X801	1-579-608-11	VIBRATOR, CRYSTAL
X802	1-577-380-11	VIBRATOR, CRYSTAL

MISCELLANEOUS

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⚠	1-416-864-11	COIL, VM
⚠	1-416-946-11	COIL, DEMAGNETIC
	1-452-032-00	MAGNET,DISC ; 10mmø
	1-452-094-00	MAGNET, ROTATABLE DISC ; 15mmø
⚠	1-452-728-21	COIL, NA ROTATION (RT-154)
	1-529-394-11	SPEAKER (5X9CM)

The components identified by shading and mark ⚠ are critical for safety.
Replace only with part number specified.

REF. NO.	PART NO.	DESCRIPTION	REMARK
	⚠ 1-574-062-22	CORD, POWER (WITH CONNECTOR)	(E/ME/JE model)
	⚠ 1-769-609-21	CORD, POWER (WITH CONNECTOR)	(HK model)
	1-900-226-67	LEAD ASSY, G2	
	1-900-234-88	CONNECTOR ASSY 7P	
	1-900-244-04	CONNECTOR ASSY , FLAT 21P	
	1-900-244-71	CONNECTOR ASSY, FLAT 13P	
	⚠ 8-451-505-11	DEFLECTION YOKE (Y21RSA-S)	
V901	⚠ 8-738-809-05	PICTURE TUBE (A51LPT70X)	(VF21M70/M77)
V901	⚠ 8-738-812-05	PICTURE TUBE (A51LPT70X) (VF21M40)	

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ACCESSORIES AND PACKING MATERIALS
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	1-569-008-21	ADAPTOR, CONVERSION 2P (E/ME/JE model)
	3-701-910-00	SCREW, SPECIAL (DIA. 3.8X20)
	3-866-053-11	MANUAL, INSTRUCTION (HK model)
	3-866-053-21	MANUAL, INSTRUCTION (E/JE model)
	3-866-053-31	MANUAL, INSTRUCTION (ME model)
*	4-069-447-01	INDIVIDUAL CARTON (VF21M40/M70)
*	4-070-013-01	INDIVIDUAL CARTON (VF21M77)
*	4-070-014-01	CUSHION,(UPPER) (ASSY)
*	4-070-015-01	CUSHION,(LOWER) (ASSY)
	4-392-003-11	BAND, HOLD
	4-392-004-11	CLIP
*	4-392-859-11	BAG, PROTECTION

REMOTE COMMANDER
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	1-418-447-11	REMOTE COMMANDER (RM-955) (VF21M77)
	1-418-448-11	REMOTE COMMANDER (RM-956) (VF21M40/M70)
	9-882-043-01	COVER, BATTERY (FOR RM-955/956)